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SIGNIFICANT ACTINIDE ACTIVITIES IN THE LWR AND LMFBR NUCLEAR FUEL CYCLES

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This study provides estimates of the time-dependent radioactivity characteristics of actinide isotopes in spent nuclear fuel, recovered plutonium and highlevel waste material from the fuel reprocessing plant. The estimates are provided for Light Water Reactors (LWRs) operating on a UO_2 equilibrium fuel cycle, afirst recycle of the plutonium produced and a second plutonium recycle. In addition to these three LWR nuclear fuel cycle computations, a foutth set is give which corresponds to a Liquid Metal Fast Breeder Reactor (LMFBR) cycle operating with mixed oxide fuel. Four time periods were considered for each of the above categories: (1) 100 years, (2) 1,000 years, (3) 10,000 years, (4) 100,000 years. In addition, log-log graphs for the time period from 1year to 1×10^8 years were included.

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OCTOBER 1974

U. S. ENVIRONMENTAL PROTECTION AGENCY
Technology Assessment Division
Advanced Technology and Studies Branch
Office of Radiation Programs
Washington, D.C. 20460

FOREWORD

The Office of Radiation Programs carries out a national program designed to evaluate the exposure of man to ionizing and nonionizing radiation, and to promote the development of controls necessary to protect the public health and safety and assure environmental quality.

Office of Radiation Programs technical reports allow comprehensive and rapid publishing of the results of intramural and contract projects. The reports are distributed to groups who have known interests in this type of information such as the Nuclear Regulatory Commission, the Energy Research & Development Administration, and State radiation control agencies. These reports are also provided to the National Technical Information Service in order that they may be readily available to the scientific community and to the public.

Comments on this analysis as well as any new information would be welcomed; they may be sent to the Director, Technology Assessment Division (AW-559), Office of Radiation Programs, U.S. Environmental Protection Agency, Washington, D.C. 20460.

W. D. Rowe, Ph.D.
Deputy Assistant Administrator
for Radiation Programs

TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1
	A. Background	1
	B. Scope of the Project	2
II.	SUMMARY	3
III.	TECHNICAL APPROACH	4
IV.	RESULTS	9
V.	METHODS VERIFICATION	10
	A. Yankee-Rowe Data	10
	B. Saxton Data	11
	C. Indian Point 1 Reprocessing Data	12
	D. Probable Accuracy of the Results	13
VI.	REFERENCES	23
VII.	DISTRIBUTION	24
	APPENDIX A	A-i
	APPENDIX B	B-i

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I. INTRODUCTION

The Office of Radiation Programs of the Environmental Protection Agency, commissioned Battelle Pacific Northwest Laboratories (Battelle-Northwest) to undertake a study to provide estimates of the significant actinide activities expected in three Light Water Reactor (LWR) fuel cycles and one Liquid Metal Fast Breeder Reactor (LMFBR) fuel cycle. This report presents the results of that study. These data should prove useful to EPA in relation to gaining a perspective of the actinides generated in these fuel cycles and in establishing technical bases for setting environmental standards.

A. Background

In the U. S. and world wide, the generation of electrical energy with nuclear power plants is growing. Current industrial practice is to use uranium to fuel thermal power reactors. The largest part of current industrial practice is to use uranium, slightly enriched above the natural ^{235}U content to fuel LWR's. The other thermal reactor technology being used industrially, but on a much smaller scale, is a uranium-thorium cycle in High Temperature Gas Cooled Reactors (HTGRs). This type of reactor uses uranium highly-enriched in ^{235}U content to start up plants. Subsequently, these plants produce another fissionable isotope of uranium, ^{233}U from the thorium, to sustain future HTGR cycles.

The nuclear power industry is looking, in the near term, to recycling the plutonium produced in thermal plants back into these plants since plutonium can be a substitute fuel. The fast breeder reactor is being developed as a future electrical generation source because it produces

more fissionable material than it consumes, thereby further alleviating the reliance on uranium resources. The Liquid Metal Fast Breeder Reactor (LMFBR) is receiving the most emphasis in the development of breeder reactors.

The benefits gained from the development of nuclear power are offset somewhat by the problem of effectively managing the by-products of this technology. In producing electrical energy via nuclear power plants, radioactive wastes are created. These wastes include materials which are created by fission (fission products) and those produced by other neutron reaction processes. The materials created in the nuclear power plant which are a long term toxicity problem, are the actinide elements (i.e., trans-actiniums). These species persist for thousands to millions of years. Therefore, plans to manage those wastes must be effective for very long time periods.

B. Scope of the Project

The objective of this project was to provide estimates of the quantities of actinides present in spent fuel, recovered material and waste for three LWR fuel cycles and one LMFBR fuel cycle. The three LWR fuel cycles considered were:

1) the slightly enriched UO_2 fuel
2) recycling plutonium in LWRs for the first time
3) a second recycle of plutonium in LWRs.

The only LMFBR fuel cycle considered was the mixed oxide (UO_2-PuO_2) fuel cycle.

The principal output of the study is in the form of graphs which illustrate the mix of actinides present in spent fuels, recovered plutonium and high level waste. These data are given in Appendix A of this report.

Results are reported in Curies (Ci) per metric ton of heavy metal for spent fuel and Curies per kilogram of actinides present for the other types of materials. A recovery factor of 99% for plutonium and uranium during reprocessing of the spent fuel was used. Four (4) time periods were considered for each of the above categories: (1) 100 years, (2) 1,000 years, (3) 10,000 years and (4) 100,000 years. In addition, log-log graphs for the time period from 1 year to 1×10^8 years were included. Thus, a total of sixty (60) graphs were prepared. The detailed data from which these graphs were derived are presented in Appendix B of the report.

II. SUMMARY

This study provides estimates of the time-dependent radioactivity characteristics of actinide isotopes in spent nuclear fuel, recovered plutonium and high level waste material from the fuel reprocessing plant. The estimates are provided for Light Water Reactors (LWRs) operating on a UO_2 equilibrium fuel cycle, a first recycle of the plutonium produced and a second plutonium recycle. In addition to these three LWR nuclear fuel cycle computations, a fourth set is given which corresponds to a Liquid Metal Fast Breeder Reactor (LMFBR) cycle operating with mixed oxide fuel.

The first phase of the study included a calibration in which the calculated spent fuel isotopic content was compared to actual spent fuel isotopic data. Adjustments were made to minimize the calculated and

measured differences over all of the isotopes. The only available computed isotopics for the LMFBR were used for computer code adjustment purposes.

The principal results of this project are given in the form of graphs in Appendix A and in tabular form in Appendix B. Because the large number of isotopes conflict with legibility only the most radioactive ones appear on the graphs. The tables provide more complete information on all of the isotopes.

III. TECHNICAL APPROACH

In order to derive the desired curves presented in Appendix A, the detailed tabular data presented in Appendix B was prepared using the computer program ORIGEN.[1] The ORIGEN computer code is a survey analysis tool used for estimating time dependent composition and activities of fuel and clad materials in fission reactors.

The characterization of actinide waste activity present in spent fuel, reprocessing plant waste and in recovered plutonium constitutes a complex analysis problem largely because of the intricate decay schemes involved. In addition to the complex decay calculations, the initial concentration of the actinide isotopes in the waste requires an accurate calculation of the neutron-induced transmutation events in the reactor core. Since ORIGEN is a survey tool, it is based upon numerous simplifying assumptions. Its validity, therefore, rests upon normalization results of higher order calculations on measured data. Therefore, the first phase of study involved calibration of the ORIGEN code to gain confidence in the accuracy of the estimates of actinides for the LWR and LMFBR cycles studied.

The ALTHAEA[2] code was used to project discharge isotopics for equilibrium fuel cycles in pressurized water reactors (PWRs) and boiling water reactors (BWRs). This code represents the physics of tracking the time-dependent burnup of fuel better than the ORIGEN code. The ALTHEA code was normalized to experimental isotopic data obtained from fuels irradiated in commercial power reactors. The results are given in Section V. After this normalization, ALTHAEA was used to estimate the discharge isotopics for BWR and PWR fuels. The ORIGEN code was then calibrated to reproduce the discharge isotopics of the principal fuel isotopes projected by the ALTHAEA code. For the LMFBR core, the concentrations given in Reference 3 for an LMFBR were used in the absence of any other information. Cooling periods of 100 and 150 days after reactor shutdown were assumed for the LMFBR and the LWR, respectively.

Spent fuel from LWRs was assumed to be a mixture of 40% spent fuel from boiling water reactors (BWRs) and 60% spent fuel from pressurized water reactors (PWRs). Since there are three LWR cycles considered and two types of LWRs, six standards were required. These were computed by the program ALTHAEA after confirming that this code could adequately reproduce the measured isotopic data of fuels irradiated in the Yankee Rowe, Indian Point and Saxton reactors (see Section V - Methods Verification). The typical BWR fuel bundle uses rods whose enrichment varies from less than 2 wt.% to about 3 wt.%. However, the calculation to obtain the standard concentration was based upon an average enrichment for rods in the bundle of 2.60 wt.% U235 in uranium. This simplification was adopted for two reasons, first, we did not have adequate data to verify more detailed

calculations, and second, reprocessors indicate that they will chop the entire bundle without segregating pins by enrichment. For the first plutonium recycle in a BWR, we assumed an average enrichment of 2.72 wt.% fissile, consisting of 2.21 wt.% U^{235}, .419 wt.% Pu239, and .087 wt.% Pu241. For the second plutonium recycle in a BWR, we assumed an average enrichment of 2.81 wt.%, consisting of 2.204 wt.% U235, .483 wt.% Pu239, and .133 wt.% Pu241. In all three cases the goal exposure was assumed to be 27000 megawatt days per metric ton of fuel (MWD/MT).

In PWR fuel bundles all of the fuel pins are the same enrichment. We have taken 3.20 wt.% U235 as the proper enrichment to obtain the assumed goal exposure of 32000 MWD/MT. For the first plutonium recycle some fuel bundles will be all slightly enriched uranium and some will be all mixed oxide (PuO_2 plus natural UO_2). For this study, we used 3.20 weight percent U-235 enrichment for the slightly enriched uranium and 3.35 weight percent fissile enrichment for the mixed oxide fuel consisting of .683 wt.% U235, 2.160 wt.% Pu239, and .507 wt.% Pu241. In order for the reactor to utilize all of the plutonium it makes, we have assumed that the average PWR will contain, by volume, 23% mixed oxide fuel and we have further assumed that the various reactor owners will buy and sell plutonium in order to reach this goal while maintaining quarter core symmetry (i.e., each owner loads a multiple of four bundles). The presence of the mixed oxide bundles adjacent to a slightly enriched UO_2 bundle will alter the power generation in both bundles and thus produce isotopic concentrations different from those calculated for these elements based on full reactor loads of each. By calculating only the isotopic concentrations averaged over the whole core we have ignored these secondary affects since they tend to compensate each other to some extent.

Since the recycled plutonium is in separate bundles, it is possible to reprocess them separately and recover the plutonium for use in the second recycle step. We used 3.50 wt.% fissile enrichment for this fuel, consisting of .675 wt.% U235, 2.022 wt.% Pu239, and .803 wt.% Pu241. From a material balance the average PWR should contain 13.7% second recycle mixed oxide, 17.7% first recycle mixed oxide and 68.6% slightly enriched uranium fuel during the period of second plutonium recycle operation. Thus the three standards for the PWR were 3.20 wt.% enriched uranium, 3.35 wt.% fissile enriched mixed oxide using first recycle plutonium, and 3.50 wt.% fissile enriched mixed oxide using second recycle plutonium, all to a goal exposure of 32000 MWD/MT.

Six different sets of cross sections for the principal isotopes were derived for ORIGEN which reproduce the discharge isotopes for this isotope from ALTHAEA calculations. The blends of these six types of spent fuel were used to produce the three desired composites are given in Table I.

TABLE I

SIX TYPES OF FUEL USED FOR THE BLEND

	Kilograms Required per Metric Ton		
Fuel Type	Enr. UO_2	1st Pu Recycle	2nd Pu Recycle
BWR-2.60 wt.% Enr. UO_2	400		
BWR-2.72 wt.% fissile Enr. M.O.		400	
BWR-2.81 wt.% fissile Enr. M.O.			400
PWR-3.20 wt.% Enr. UO_2	600	462	412
PWR-3.35 wt.% fissile Enr. M.O.		138	106
PWR-3.50 wt.% fissile Enr. M.O.			82

The cooling period was 150 days after reactor shutdown for these LWR fuel cycles.

To obtain the data for the waste stream the above calculations were performed for the lesser amount of spent fuel that would be required to yield one kilogram of actinides in the waste after 99% of the uranium and plutonium was removed. The amount of spent fuel for each case is listed in Table II.

TABLE II

AMOUNT OF SPENT FUEL

Case	Kilograms of Spent Fuel
LWR-UO_2	96.2
LWR-1st Pu Recycle	93.8
LWR-2nd Pu Recycle	91.4
LMFBR	92.8

The isotopic concentrations from the spent fuel were used to obtain the initial plutonium concentrations for the plutonium waste data. The concentrations used are given in Table III.

TABLE III

PLUTONIUM COMPOSITIONS AND CONCENTRATIONS

Isotope	LWR-UO_2	LWR-1st Pu Recycle	LWR-2nd Pu Recycle	LMFBR
Pu 236	8.0×10^{-5}	5.4×10^{-5}	4.2×10^{-5}	2.8×10^{-5}
Pu 238	17.3	22.5	28.0	6.43
Pu 239	558.	475.	435.	699.
Pu 240	245.	273.	277.	223.
Pu 241	131.	149.	155.	46.0
Pu 242	48.6	80.3	105.	25.6
Pu 244	1.1×10^{-11}	3.1×10^{-10}	4.3×10^{-10}	2.2×10^{-4}

IV. RESULTS

The principal results of this project are the graphs which depict actinide activity as a function of time. These sixty graphs are presented in Appendix A. The tables in Appendix B contain the complete data from which the graphs in Appendix A were generated. Because a plot of all of the information contained in the tables would produce an illegible graph in most cases, only the highest activity isotopes are plotted. Appendix B therefore contains more information than Appendix A.

V. METHODS VERIFICATION

The calculation of isotopic compositions for fuel discharged from nuclear reactors requires a knowledge of the neutron cross sections, decay constants, and the initial composition of the fuel materials. In addition the temperature and neutron flux history of the fuel in the reactor must be known.

To test the validity of the method of calculation and the values of the many physical constants used in calculating the reactor discharge isotopic compositions, comparisons were made with the published isotopic data from three light water reactors.

Although there is some data on spent fuel isotopics available from various reactors available, both from analysis of small quantities of spent fuel and from aliquot samples taken from large dissolver batches, little of it contains results for elements beyond plutonium. Since the higher elements are of importance at certain decay time-periods, two of the available experimental data sets for small samples were chosen because transplutonium isotopics were provided. These data were obtained from fuel irradiated in the Yankee-Rowe and Saxton reactors. The isotopic information available from large sample data was that for fuel irradiated in Indian Point 1.

A. Yankee-Rowe Data

The Yankee Core Evaluation Program[4] has provided isotopic information for fuel irradiated in this reactor which is a commercial PWR plant. In addition to these studies, fuel discharged from the Yankee reactor has been analyzed at Pacific Northwest Laboratory (PNL) to obtain data for elements beyond plutonium.

These data are expressed as isotopic concentrations in nuclei per barn-centimeter (nuclei per cubic centimeter times 10^{-24}). Tables IV, V and VI present comparisons of calculated versus measured values of the uranium, plutonium and transplutonium isotopes respectively. All isotopic concentrations have been corrected for decay to the reactor shutdown date by the author of Reference 5. The calculated isotopics include a decay period of 117 shutdown days.

The overall agreement between calculated and measured isotopic concentration in terms of the percent standard deviation of the sample-averaged concentration is shown in Table IV. As expected, the isotopes which are the end result of several neutron captures are predicted with the lowest accuracy. The overall percentage deviation is 13.5% for all isotopes.

B. Saxton Reactor Data

As part of the AEC plutonium utilization program, the Saxton Reactor Core II was loaded with PuO_2-UO_2 fuel. At the end of life of Core II, the mixed oxide fuel elements were reconstituted using the same fuel rods. However, the lattice pitch of the reconstituted rods was doubled by leaving alternate fuel rod positions empty. The reconstituted fuel was irradiated in Core III. The isotopic analysis of sections from four high exposure fuel rods included Am-241/Pu-239, Am-243/Pu-239, Cm-242/Pu239, Cm-244/Pu-239, and Pu-239/U-238 ratios in addition to the usual plutonium and uranium isotopic assay.(6)

This Saxton data forms a particularly stringent test of burnup isotopic calculational methods. Instead of starting with only UO_2 present, four of the major plutonium isotopes are present in significant amounts. Two different lattice pitches are used which strongly effects the neutron energy spectrum.

A comparison of calculated versus measured isotopics for the Core III Saxton rods is given in Tables VIII, IX and X. Here the data is given at the time the isotopic assay was made. A zero power decay period from the reactor shutdown date to the analysis date is performed in the calculations.

The overall standard deviation between measured and calculated isotopic concentrations is given for Saxton in Table XI for each isotope. The average deviation over all isotopes is 14.3% of the sample averaged concentration.

C. Indian Point 1 Reprocessing Data

The Yankee and Saxton data result from small samples taken from rod segments of fuel. The buildup of actinides during irradiation is generally nonlinear. Hence, it is valid to ask if the average of widely varying irradiation conditions typical of a nuclear reactor core can be used to calculate isotopics in large batches of irradiated fuel.

Several metric tons of spent fuel from Indian Point reactor have been reprocessed. Samples of the fuel batches have been analyzed.[7] A straightforward comparison of calculated versus measured uranium and

plutonium compositions is given in Table XII. An examination of the standard deviations shows that the uncertainty in the batch data is comparable to that in the Yankee and Saxton small sample data.

D. Probable Accuracy of the Results

Based on the Yankee, Saxton and Indian Point data, specific activities for the most abundant isotopes: U-235, U-238, Pu-239, Pu-240, Pu-241 and Pu-242 appear to be uncertain by ±10%.

U-236 should be assigned a ±20% uncertainty. Np-237 should require ±20%. while the Americium and Curium show a ±40% uncertainty along with the rarer plutonium isotopes Pu-236 and Pu-238.

In general, given a specific reactor type plus some isotopic data, much closer agreement can be obtained. The present results must be valid over all types of LWRs employing UO_2 and PuO_2-UO_2 fuel and the differences between calculated and measured isotopic data reflect these rather stringent requirements.

TABLE IV. Yankee Uranium Isotopics

Sample		Isotopic Concentrations (N/B-cm) U-234[a]	U-235[b]	U-236	U-238	Burnup[c] GWD/MTM
G4-C-f6	measured	3.48 -6	4.93 -4	5.73 -5	2.106 -2	13.629
	calculated	1.303-9	4.93 -4	5.43 -5	2.139 -2	13.319
F5-C-a1	measured	3.07 -6	3.54 -4	8.58 -5	2.086 -2	23.770
	calculated	7.96 -9	3.54 -4	7.91 -5	2.121 -2	23.131
F5-NW-b2	measured	3.33 -6	3.28 -4	9.26 -5	2.0891-2	23.914
	calculated	1.07 -8	3.28 -4	8.34 -5	2.117 -2	25.324
F5-NWb2	measured	3.37 -6	3.22 -4	9.47 -5	2.081 -2	24.266
	calculated	1.14 -8	3.22 -4	8.44 -5	2.116 -2	25.851
Standard Deviation Between Code and Mean				0.78 -5	.033 -2	

Notes:

a) No initial concentration of U-234 was assumed since the initial composition of the feed material did not contain a U-234 assay. The calculated values reflect only buildup from Pu-238 alpha decay less the U-234 burnup and are therefore not comparable to the measured value.

b) The U-235 concentration is used to terminate the burnup calculation hence all U-235 calculated values agree exactly with the measured values.

c) The differences between calculated and measured burnup occur because the calculation is terminated by specifying a final U-235 concentration instead of a final burnup.

d) Numerical entries in the table of the form X.ZW±Y are $X.ZW*10^{\pm Y}$, where X, Z, W, and Y are digits.

TABLE V. Yankee Plutonium Isotopics

Sample		Isotopic Concentrations (N/B-cm)					
		Pu-236	Pu-238	Pu-239	Pu-240	Pu-241	Pu-242
G4-C-f6	measured	4.4 -12	4.8 -7	1.145-4	1.853-5	1.043-5	1.00-6
	calculated	4.0 -12	4.19-7	1.148-4	1.956-5	1.079-5	1.03-6
F5-C-a1	measured	1.64-11	2.08-6	1.589-4	3.633-5	2.551-5	4.32-6
	calculated	1.27-11	1.56-6	1.440-4	3.597-5	2.506-5	4.40-6
F5-NW-b2 (center)	measured	1.50-11	2.04-6	1.384-4	3.844-5	2.454-5	5.13-6
	calculated	1.52-11	1.95-6	1.477-4	3.917-5	2.811-5	5.46-6
F5-NW-b2 (bottom)	measured	1.60-11	2.25-6	1.405-4	4.037-5	2.599-5	5.68-6
	calculated	1.58-11	2.05-6	1.485-4	3.991-5	2.882-5	5.74-6
Standard Deviation Calculated versus Measured		.19-11	.42-6	.096-4	.070-5	0.230-5	0.17-6

TABLE VI. Yankee Neptunium, Americium and Curium Isotopics

Sample		Isotope Concentrations (N/B-cm)				
		Np-237	Am-241	Am-243	Cm-242	Cm-244
G4-Cf6	measured	4.30-6	-1.0 -8[a)]	8.2 -8	4.09 -8	1.19 -8
	calculated	3.77-6	1.82-7	8.84-8	2.89 -8	8.26 -9
F5-C-ai	measured	8.73-6	1.14-6	7.64-7	1.612-7	1.838-7
	calculated	7.93-6	6.76-7	6.72-7	1.642-7	1.185-7
F5-NW-b2 (center)	measured	8.92-6	1.08-6	8.48-7	1.498-7	1.940-7
	calculated	8.92-6	8.10-7	9.12-7	2.100-7	1.791-7
F5-NW-b2 (bottom)	measured	9.10-6	1.11-6	9.75-7	1.874-7	2.331-7
	calculated	9.16-6	8.43-7	9.77-7	2.216-7	1.966-7
Standard Deviation Calculated versus Measured		0.48-6	0.31-6	0.56-7	0.35 -7	0.38 -7

Notes:

a) When corrected back in time to the discharge date a negative concentration was calculated by the author of Reference 2. This indicates an error in the assay and/or decay constant.

TABLE VII. Yankee Standard Deviation - Calculated Versus Measured

Isotope	Standard Deviation (Calculated versus measured)	Sample-Averaged Concentration	Percent Standard Deviation
U-236	0.78 -5	8.26-2	9.4
U-238	.033-2	2.09-2	1.6
Pu-236	.19-11	1.30-11	14.6
Pu-238	.42 -6	1.71-6	24.4
Pu-239	.096-4	1.38-4	7.0
Pu-240	.070-5	3.34-5	2.1
Pu-241	0.23 -5	2.16-5	10.6
Pu-242	0.17 -6	4.03-6	4.2
Np-237	0.48 -6	7.76-6	6.2
Am-241	0.31 -6	0.83-6	37.3
Am-243	0.56 -7	6.31-6	8.4
Cm-242	0.35-7	1.35-7	25.9
Cm-244	0.38-7	1.56-7	24.3
		Average	13.5%

TABLE VIII. Saxton Uranium Isotopics

Sample[a]		Isotopic Concentrations (N/B-cm) U-234	U-235	U-236	U-238	Burnup[b] GWD/MTM
LS	measured	1.035-6	8.59-5	1.30 -5	2.06-2	42.85
LS	calculated	0.89 -6	8.07-5	1.548-5	2.05-2	42.85
PF	measured	1.036-6	7.40-5	1.47 -5	2.06-2	50.95
PF	calculated	0.86 -6	7.12-5	1.72 -5	2.04-2	50.95
Standard Deviation calculated versus measured		0.16 -6	0.42-5	0.25 -5	0.02-2	

a) Four samples were measured in Reference 4. Two of these were rejected because of internal inconsistencies in the measured isotopics.

b) The calculations were terminated by specifying the measured burnup, hence there is exact agreement between measured and calculated burnup.

TABLE IX. Saxton Plutonium Isotopics

Sample	Isotopic Concentrations (N/B-cm)					
	Pu-236[a)]	Pu-238[a)]	Pu-239	Pu-240	Pu-241	Pu-242
LS measured	5.23-12	6.60-6	4.52-4	3.18-4	9.31-5	2.71-5
range	(6.28-4.19)	(6.93-6.27)	-	-	-	-
LS calculated	7.28-12	6.63-6	4.57-4	3.35-4	9.60-5	2.66-5
PF measured	6.14-12	8.24-6	3.82-4	3.43-4	1.06-4	3.66-5
range	(7.39-4.93)	(8.64-7.83)	-	-	-	-
PF calculated	9.30-12	8.09-6	3.81-4	3.38-4	1.01-4	3.48-5
Standard Deviation calculated versus measured	2.66-12	0.10-6	0.04-4	0.13-4	0.04-4	0.13-5

Notes:

a) Experimental uncertainty was estimated for only these two plutonium isotopes.

TABLE X. Saxton Neptunium, Americum and Curium Isotopics

Sample	Isotopic Concentrations (N/B-cm) [a]				
	Np-237	Am-241	Am-243	Cm-242	Cm-244
LS measured	2.70 -6	1.86-5	1.91-6	5.42-7	6.41-7
range	(3.11-2.30)	(2.04-1.66)	(2.17-1.67)	(6.00-4.90)	(7.08-5.80)
LS calculated	3.70 -6	1.79-5	3.50-6	3.49-7	6.31-7
PF measured	4.052-6	1.83-5	4.50-6	7.32-7	1.02-6
range	(4.66-3.44)	(2.01-1.65)	(5.63-3.38)	(8.06-6.59)	(1.12-0.92)
PF calculated	4.33 -6	1.84-5	5.17-6	4.27-7	1.15-6
Standard Deviation calculated versus measured	0.73 - 6	0.05	1.22-6	2.55-7	0.09-6

Notes:

a) Since the test data for these isotopes are given in Reference 5 as atom ratios, the "measured" concentrations in this table were calculated assuming that the measured and calculated U-238 concentrations agree exactly. This assumption is justified by the small overall change of U-238 concentration with burnup.

TABLE XI. Saxton Standard Deviation Calculated versus Measured

Isotope	Standard Deviation of Calculated versus Measured Values	Sample-Averaged Concentration	Percent Standard Deviation
U-234	0.16 - 6	1.0355 - 6	15.5
U-235	0.42 - 5	8.00 - 5	5.3
U-236	0.25 - 5	1.39 - 5	18.0
U-238	0.02 - 2	2.06 - 2	1.0
Pu-236	2.66 -12	5.685 -12	46.8
Pu-238	0.10 - 6	7.420 - 6	1.3
Pu-239	0.04 - 4	4.17 - 4	1.0
Pu-240	0.13 - 4	3.305 - 4	3.9
Pu-241	0.04 - 4	0.9955 - 4	4.0
Pu-242	0.13 - 5	3.185 - 5	4.0
Np-237	0.73 - 6	3.376 - 5	21.6
Am-241	0.05 - 5	1.845 - 5	2.7
Am-243	1.22 - 6	3.205 - 6	38.1
Cm-242	2.55 - 7	6.37 - 6	40.0
Cm-244	0.09 - 6	0.8305 - 6	10.8
		Average	14.3

TABLE XII. Indian Point 1 Batch Isotopics

Batch	Initial Enrichment	Uranium Composition (Wt %)				Plutonium Composition (Wt %)					Pu/U gms/tonne	Burnup GWD/MT
		U-234	U-235	U-236	U-238	Pu-238	Pu-239	Pu-240	Pu-241	Pu-242		
3	2.78	0.021	1.804	0.220	97.955	0.409	75.587	15.455	7.378	1.171	6188	12.6
calculated		0.031	1.676	0.266	98.027	0.321	76.409	15.390	7.068	0.812	5642	
5	2.78	0.019	1.786	0.218	97.955	0.432	74.546	15.456	7.381	1.185	6185	12.6
calculated		0.031	1.676	0.266	98.027	0.321	76.409	15.390	7.068	0.812	5642	
9	3.263	0.016	1.758	0.310	97.916	0.834	70.043	17.296	9.808	2.019	7887	19.5
calculated		0.028	1.627	0.369	97.976	0.603	69.986	17.897	9.861	1.653	7278	
1	4.076	0.019	2.022	0.422	97.537	1.309	68,083	17.381	10.790	2.437	9320	25.10
calculated		0.038	1.928	0.478	97.568	0.844	67.892	18.159	11.053	2.052	8200	
Standard Deviation		0.014	0.117	0.053	0.061	0.269	1.023	0.244	0.067	0.195	745	
Percent of Batch Averaged value		75.7[a]	6.4	18.1	0.062	36.1	1.4	1.5	0.76	11.4	10.1	

a) The larger discrepancy results from an estimated initial U-234 concentration. None was provided in the data. A much more accurate guess could be made; however time did not permit pursuing this further.

VI. REFERENCES

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4. M. J. O'Boyle, Ed., "Yankee Core Evaluation Program Quarterly Progress Report for the Period Ending March 31, 1966," WCAP-6080, June 1966.

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6. R. C. Goodspeed, Ed., "Saxton Plutonium Project Quarterly Progress Report for the Period Ending June 30, 1973," WCAP-3385-36, July 1973.

7. Personal Communication, letter, Arthur W. Flynn and Ronald X. Horn to D. E. Christensen, January 15, 1973.

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Appendix A

Table of Contents

Figure	Title	Page
	EXPLANATION	A-1, A-4
1	LWR Equilibrium Uranium Cycle - Spent Fuel Significant Actinide Activity for the Period 0 to 140 years	A-5
2	LWR Equilibrium Uranium Cycle - Spent Fuel Significant Actinide Activity for the Period 100 to 1400 years	A-6
3	LWR Equilibrium Uranium Cycle - Spent Fuel Significant Actinide Activity for the Period 1 to 14 thousand years	A-7
4	LWR Equilibrium Uranium Cycle - Spent Fuel Significant Actinide Activity for the Period 10 to 140 thousand years	A-8
5	LWR Equilibrium Uranium Cycle - Spent Fuel Significant Actinide Activity for the Period 1 to 10^8 years	A-9
6	LWR Equilibrium Uranium Cycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 0 to 140 years	A-10
7	LWR Equilibrium Uranium Cycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 100 to 1400 years	A-11
8	LWR Equilibrium Uranium Cycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 14 thousand years	A-12
9	LWR Equilibrium Uranium Cycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 10 to 140 thousand years	A-13
10	LWR Equilibrium Uranium Cycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 10^8 years	A-14
11	LWR Equilibrium Uranium Cycle - Plutonium Significant Actinide Activity for the Period 0 to 140 years	A-15
12	LWR Equilibrium Uranium Cycle - Plutonium Significant Actinide Activity for the Period 100 to 1400 years	A-16
13	LWR Equilibrium Uranium Cycle - Plutonium Significant Actinide Activity for the Period 1 to 14 thousand years	A-17
14	LWR Equilibrium Uranium Cycle - Plutonium Significant Actinide Activity for the Period 10 to 140 thousand years	A-18
15	LWR Equilibrium Uranium Cycle - Plutonium Significant Actinide Activity for the Period 1 to 10^8 years	A-19

Figure	Title	Page
16	LWR First Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 0 to 140 years	A-20
17	LWR First Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 100 to 1400 years	A-21
18	LWR First Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 1 to 14 Thousand years	A-22
19	LWR First Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 10 to 140 thousand years	A-23
20	LWR First Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 1 to 10^8 years	A-24
21	LWR First Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 0 to 140 years	A-25
22	LWR First Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 100 to 1400 years	A-26
23	LWR First Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 14 Thousand years	A-27
24	LWR First Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 10 to 140 thousand years	A-28
25	LWR First Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 10^8 years	A-29
26	LWR First Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 0 to 140 years	A-30
27	LWR First Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 100 to 1400 years	A-31
28	LWR First Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 1 to 14 Thousand years	A-32
29	LWR First Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 10 to 140 thousand years	A-33
30	LWR First Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 1 to 10^8 years	A-34
31	LWR Second Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 0 to 140 years	A-35
32	LWR Second Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 100 to 1400 years	A-36

Figure	Title	Page
33	LWR Second Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 1 to 14 Thousand years	A-37
34	LWR Second Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 10 to 140 Thousand years	A-38
35	LWR Second Plutonium Recycle - Spent Fuel Significant Actinide Activity for the Period 1 to 10^8 years	A-39
36	LWR Second Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 0 to 140 years	A-40
37	LWR Second Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 100 to 1400 years	A-41
38	LWR Second Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 14 Thousand years	A-42
39	LWR Second Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 10 to 140 thousand years	A-43
40	LWR Second Plutonium Recycle - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 10^8 years	A-44
41	LWR Second Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 0 to 140 years	A-45
42	LWR Second Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 100 to 1400 years	A-46
43	LWR Second Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 1 to 14 thousand years	A-47
44	LWR Second Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 10 to 140 thousand years	A-48
45	LWR Second Plutonium Recycle - Plutonium Significant Actinide Activity for the Period 1 to 10^8 years	A-49
46	LMFBR - Spent Fuel Significant Actinide Activity for the Period 0 to 140 years	A-50
47	LMFBR - Spent Fuel Significant Actinide Activity for the Period 100 to 1400 years	A-51
48	LMFBR - Spent Fuel Significant Actinide Activity for the Period 1 to 14 thousand years	A-52

Figure	Title	Page
49	LMFBR - Spent Fuel Significant Actinide Activity for the Period 10 to 140 thousand years	A-53
50	LMFBR - Spent Fuel Significant Actinide Activity for the Period 1 to 10^8 years	A-54
51	LMFBR - Reprocessing Plant Waste Significant Actinide Activity for the Period 0 to 140 years	A-55
52	LMFBR - Reprocessing Plant Waste Significant Actinide Activity for the Period 100 to 1400 years	A-56
53	LMFBR - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 14 thousand years	A-57
54	LMFBR - Reprocessing Plant Waste Significant Actinide Activity for the Period 10 to 140 thousand years	A-58
55	LMFBR - Reprocessing Plant Waste Significant Actinide Activity for the Period 1 to 10^8 years	A-59
56	LMFBR - Plutonium Significant Actinide Activity for the Period 0 to 140 years	A-60
57	LMFBR - Plutonium Significant Actinide Activity for the Period 100 to 1400 years	A-61
58	LMFBR - Plutonium Significant Actinide Activity for the Period 1 to 14 thousand years	A-62
59	LMFBR - Plutonium Significant Actinide Activity for the Period 10 to 140 thousand years	A-63
60	LMFBR - Plutonium Significant Actinide Activity for the Period 1 to 10^8 years	A-64

Appendix A

EXPLANATION

A total of sixty (60) graphs with corresponding tables are presented. Initial actinide inventories are based on calculational methods which are justified by comparison to LWR spent fuel isotopic arrays in the case of LWRs and on computer design isotopics for the LMFBR. These graphs may be used to estimate the actinide activity of either high-level waste or low-level waste. For example, UO_2 pellets from a spent fuel element would be classified as high-level waste, while contaminated rags and tools used during decontamination of the shipping cask it came in would be classified as low-level waste because the over-all level of radioactivity is much higher for the pellets. In spite of this, both samples would contain the same activity level in units of curies per ton of heavy metal.

In other words, the usual criteria for high and low level wastes are based on the gross activity, i.e., curies. The figures presented in this appendix are specific activities, i.e., curies per mass of material. This specific activity can be changed only by chemical separation, irradiation or mixing with other materials. For a specific application of the curves, the source of the waste material must be taken into account.

The first fifteen graphs apply to the assumed mixture of 40% BWR fuel and 60% PWR fuel for the period when both reactor types are discharging slightly enriched uranium fuel at goal exposure. The assumed goal exposures were 27000 MWD/MT for BWRs and 32000 MWD/MT for PWRs. This represents the period approximately 4 to 10 years after startup for BWRs and 3 to 8 years after startup for PWRs. The earlier period when the first cores from these reactors are being discharged at lower exposures was not considered.

Graphs 16 through 30 apply to the period when both reactor types are discharging fuel which includes the average amount of first recycle plutonium. This is approximately 11 to 16 years after startup for BWRs and 9 to 13 years after startup for PWRs.

Graphs 31 through 45 apply to the period when both reactor types are discharging fuel which includes the average amount of first and second recycle plutonium. This is approximately 17 to 22 years after startup for BWRs and 14 to 18 years after startup for PWRs.

Graphs 46 through 60 apply to the 1000 MWe LMFBR reference design as presented in GEAP-5678.

In each group of 15 graphs, the first 5 apply to the spent fuel, the second 5 to the reprocessing plant waste stream, and third 5 to the recovered plutonium. In each group of 5 graphs, the first covers the period from date of shipment from the reactor (assumed 150 days after reactor shutdown in LWR cases and 100 days after reactor shutdown in LMFBR cases) to 140 years. The second graph in each group of 5 graphs covers the period from 100 years to 1400 years. The data from 0 to 100 years were purposely excluded since they are presented with greater accuracy on the preceding graph. Note, however, the scale has changed and some isotopes appear near the bottom of the graph that were not present on the preceding graph, thus where possible data for these isotopes is given from 0 to 100 years. The third graph in each group of 5 covers the

period from 1 thousand years to 14 thousand years. Again, please note the change in scale. The fourth graph in each group of 5 covers the period from 10 thousand years to 140 thousand years. The fifth graph in each group of 5 covers the period from 1 year to 1×10^8 years on a log-log plot. Some of the less significant isotopes have been left off of this graph to improve its readibility. These isotopes include californium, berkelium, the higher curium isotopes, uranium 237, plutonium 236 and its daughters. The isotopes on the graph contribute 1% or more of the activity at some time. Data for the isotopes omitted are included in the tables provided in Appendix B.

For those curves on any graph labeled with the symbols for more than one isotope (cf Np237, Pa233) the value plotted represents the activity of each isotope NOT their sum. This circumstance represents short-lived daughters in secular equilibrium with a long-lived parent.

FIGURE 1

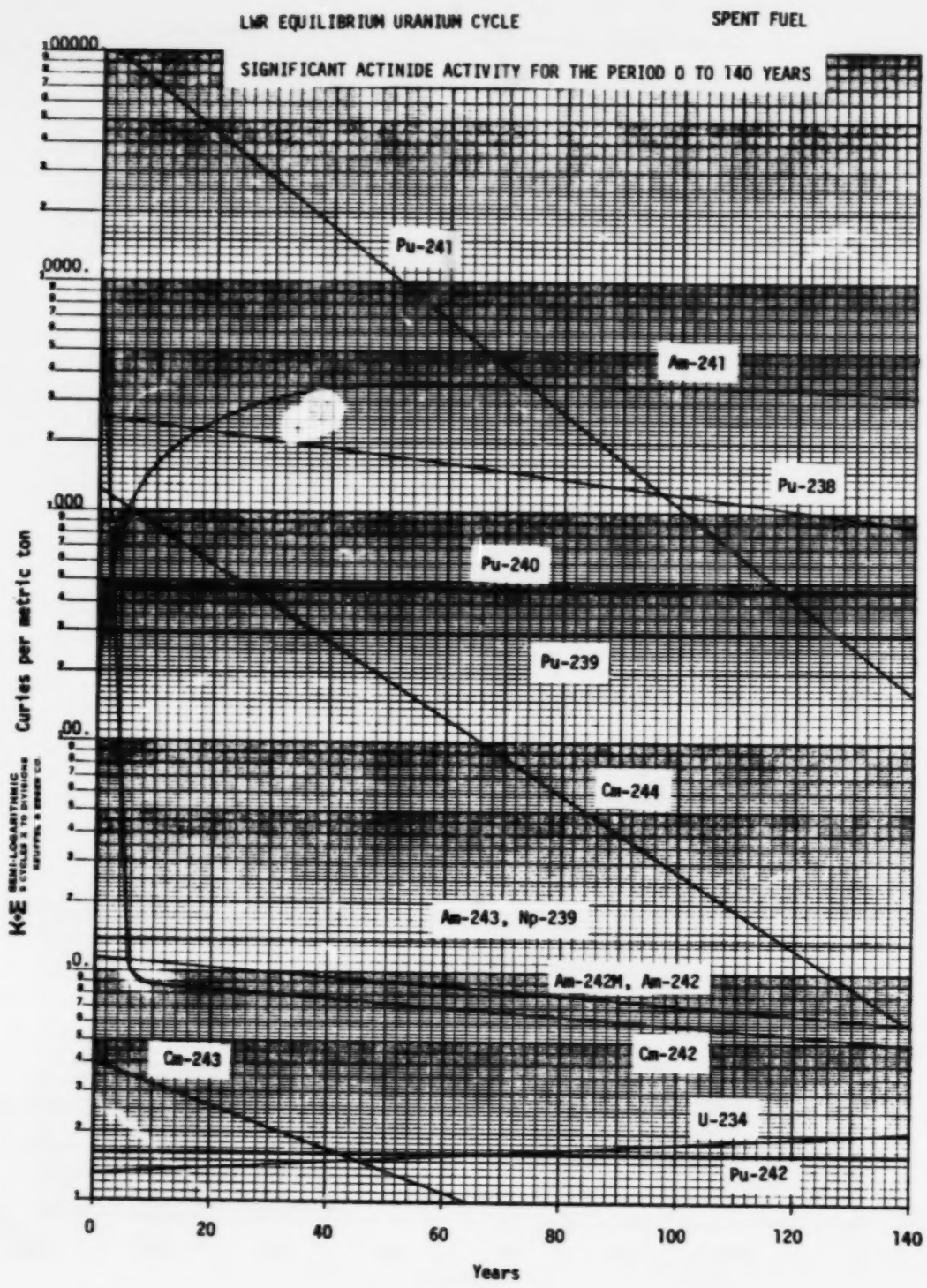

LMR EQUILIBRIUM URANIUM CYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Curies per metric ton
Years
Pu-241
Am-241
Pu-238
Pu-240
Pu-239
Cm-244
Am-243, Np-239
Am-242M, Am-242
Cm-242
Cm-243
U-234
Pu-242
0
20
40
60
80
100
120
140

FIGURE 2

LWR EQUILIBRIUM URANIUM CYCLE SPENT FUEL

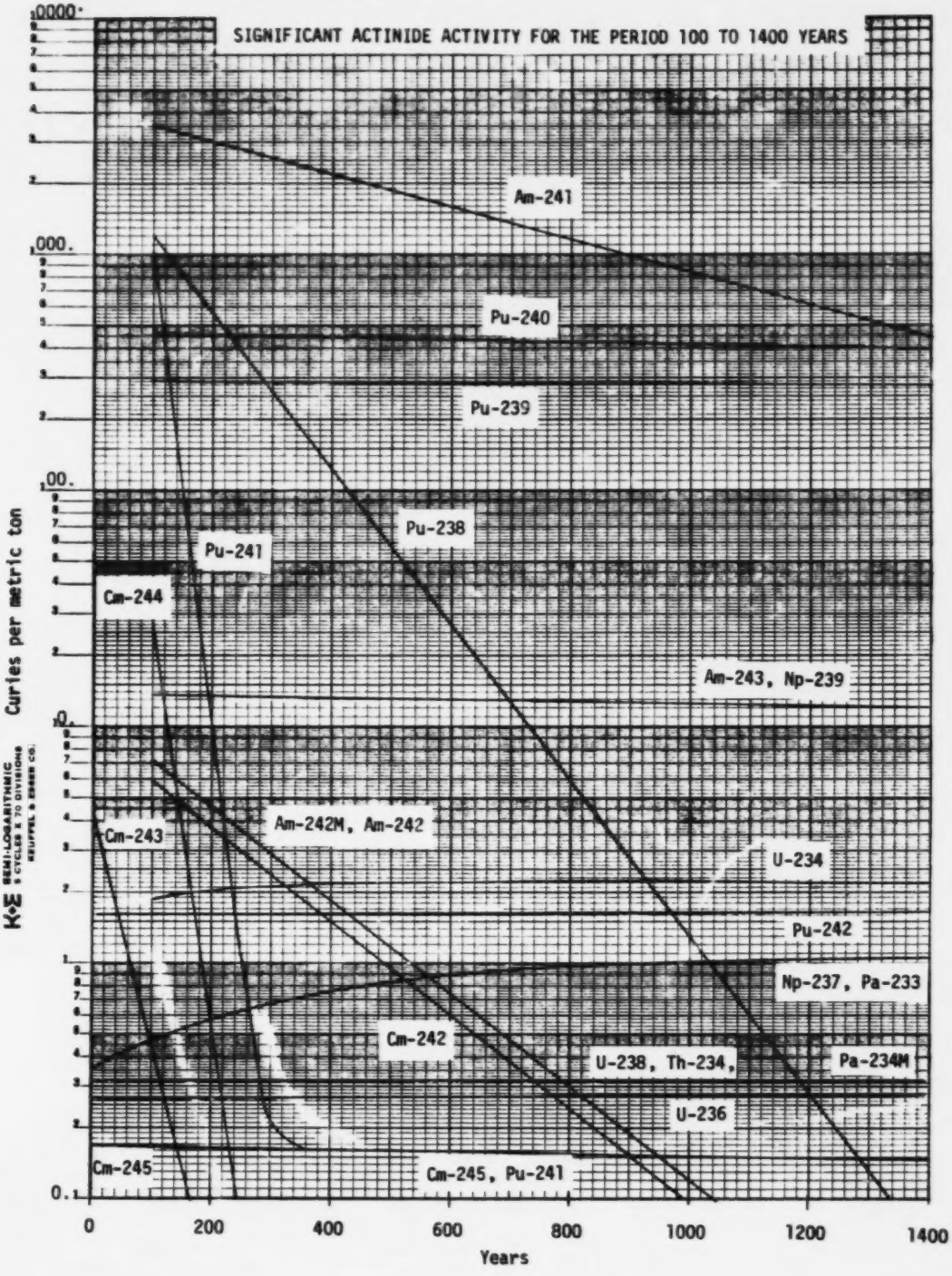


FIGURE 3

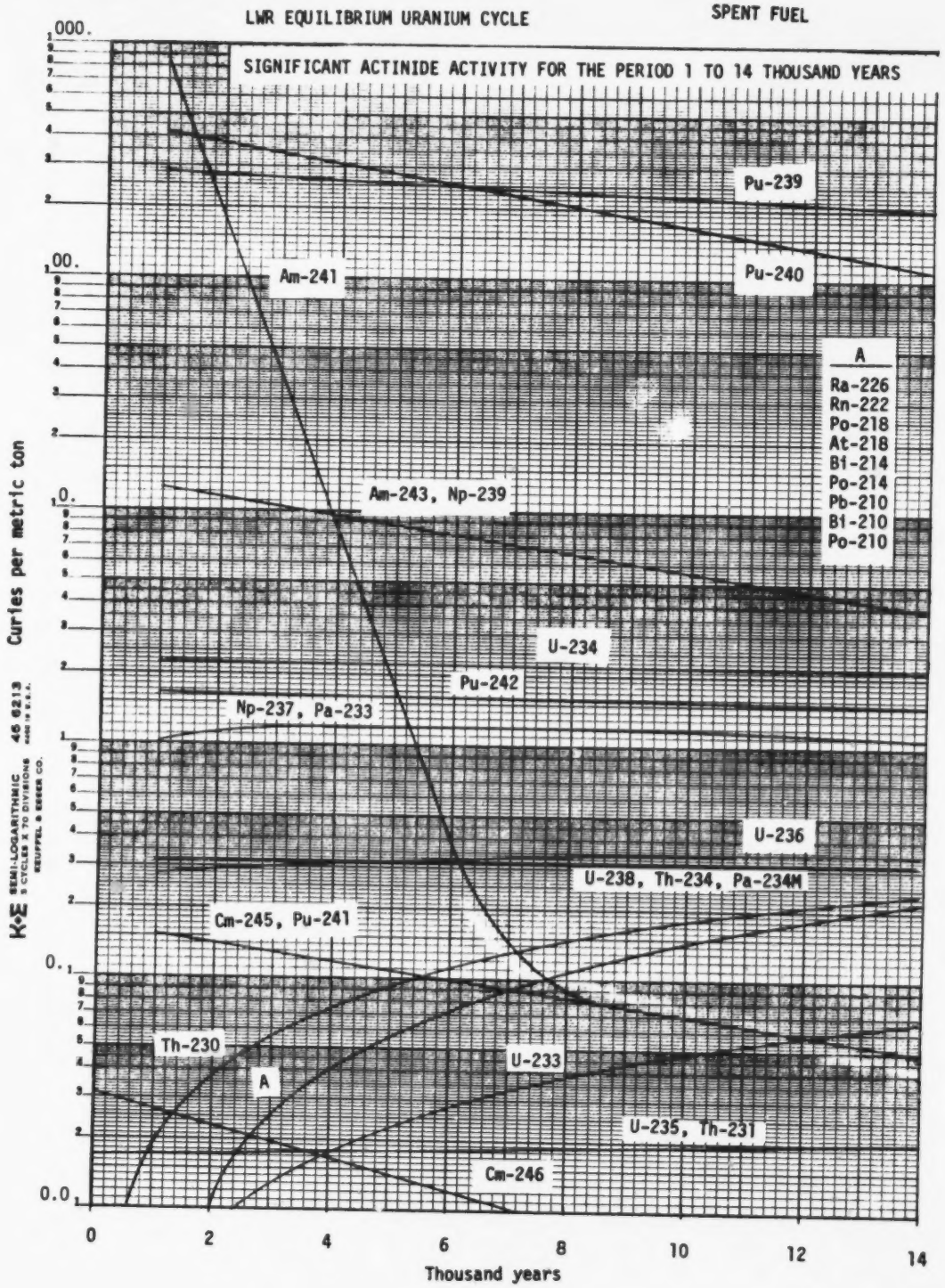

LWR EQUILIBRIUM URANIUM CYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Curies per metric ton
000.
00.
0.
0.1
0.0
Pu-239
Pu-240
Am-241
Am-243, Np-239
U-234
Pu-242
Np-237, Pa-233
U-236
U-238, Th-234, Pa-234M
Cm-245, Pu-241
Th-230
A
U-233
U-235, Th-231
Cm-246
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
0
2
4
6
8
10
12
14
Thousand years
K+E 46 6213
SEMI-LOGARITHMIC
5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO.

FIGURE 4

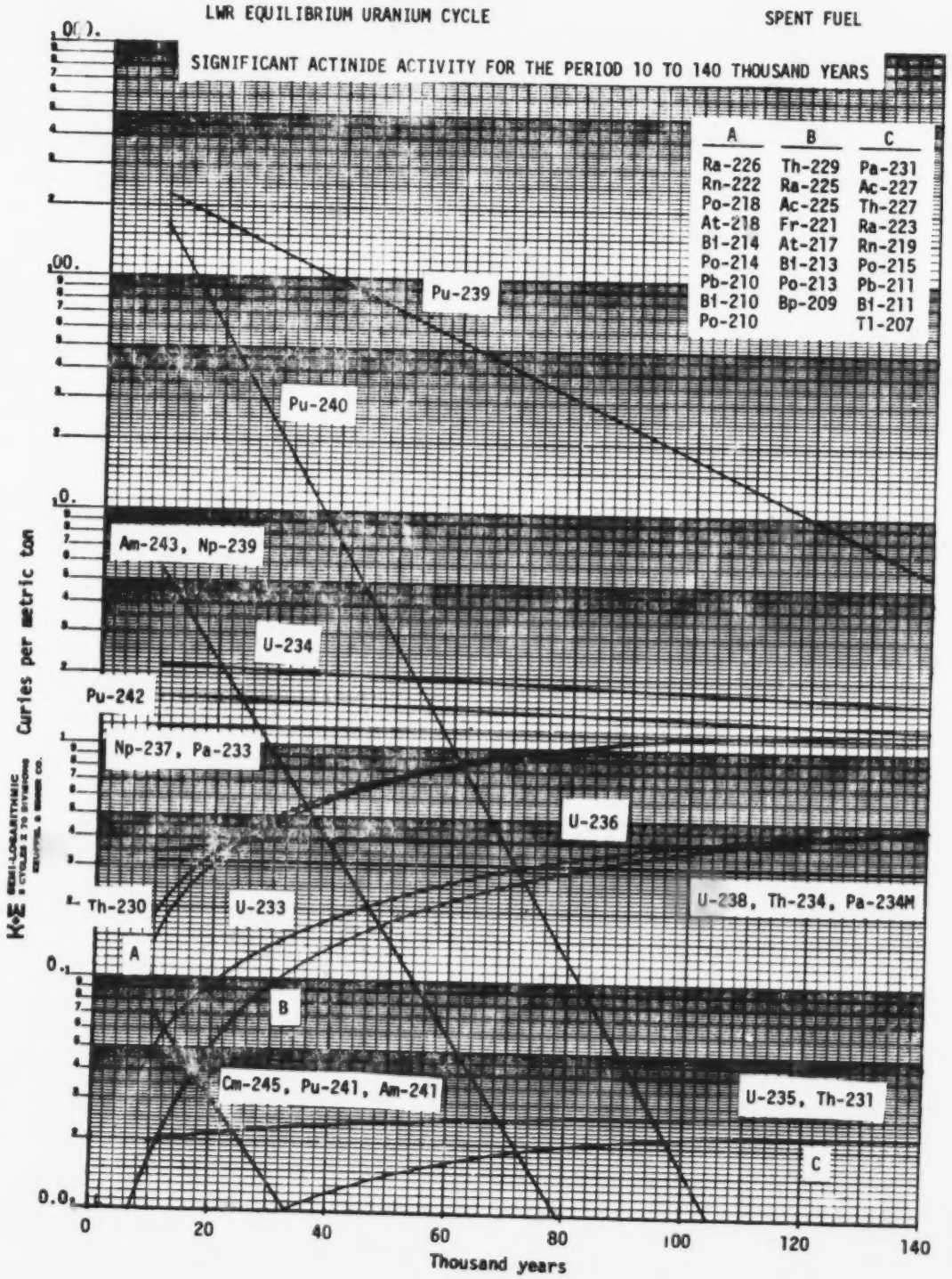

LWR EQUILIBRIUM URANIUM CYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-239
Pu-240
Am-243, Np-239
U-234
Pu-242
Np-237, Pa-233
U-236
U-238, Th-234, Pa-234M
Th-230
U-233
A
B
Cm-245, Pu-241, Am-241
U-235, Th-231
C
Curies per metric ton
0.0
0.1
0
20
40
60
80
100
120
140
Thousand years

FIGURE 5

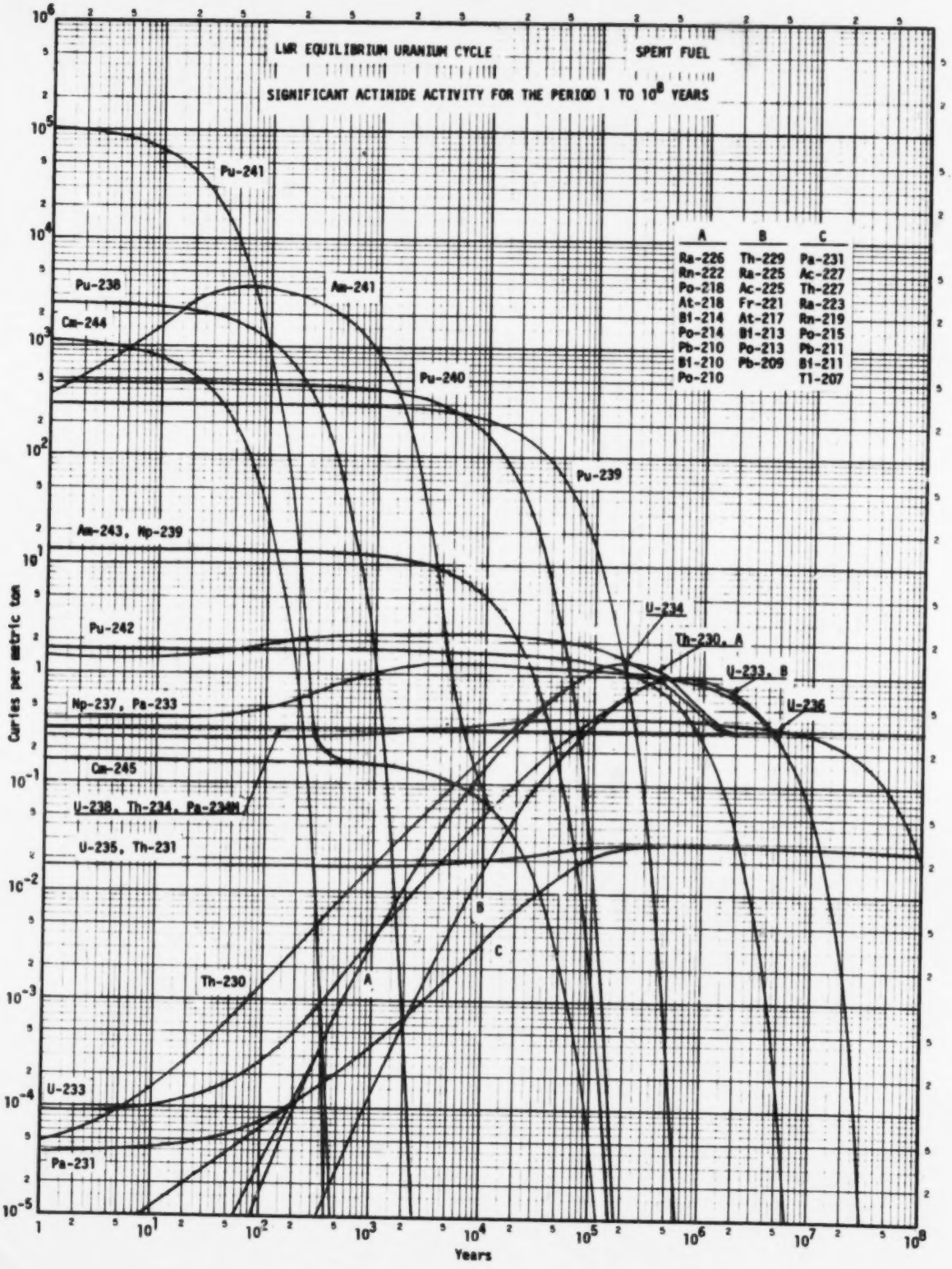

LWR EQUILIBRIUM URANIUM CYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
Curies per metric ton
Years
Pu-241
Pu-238
Am-241
Cm-244
Pu-240
Pu-239
Am-243, Np-239
Pu-242
U-234
Th-230, A
U-233, B
U-236
Np-237, Pa-233
Cm-245
U-238, Th-234, Pa-234M
U-235, Th-231
Th-230
U-233
Pa-231
A
B
C
A: Ra-226, Rn-222, Po-218, At-218, Bi-214, Po-214, Pb-210, Bi-210, Po-210
B: Th-229, Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
C: Pa-231, Ac-227, Th-227, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207

FIGURE 6

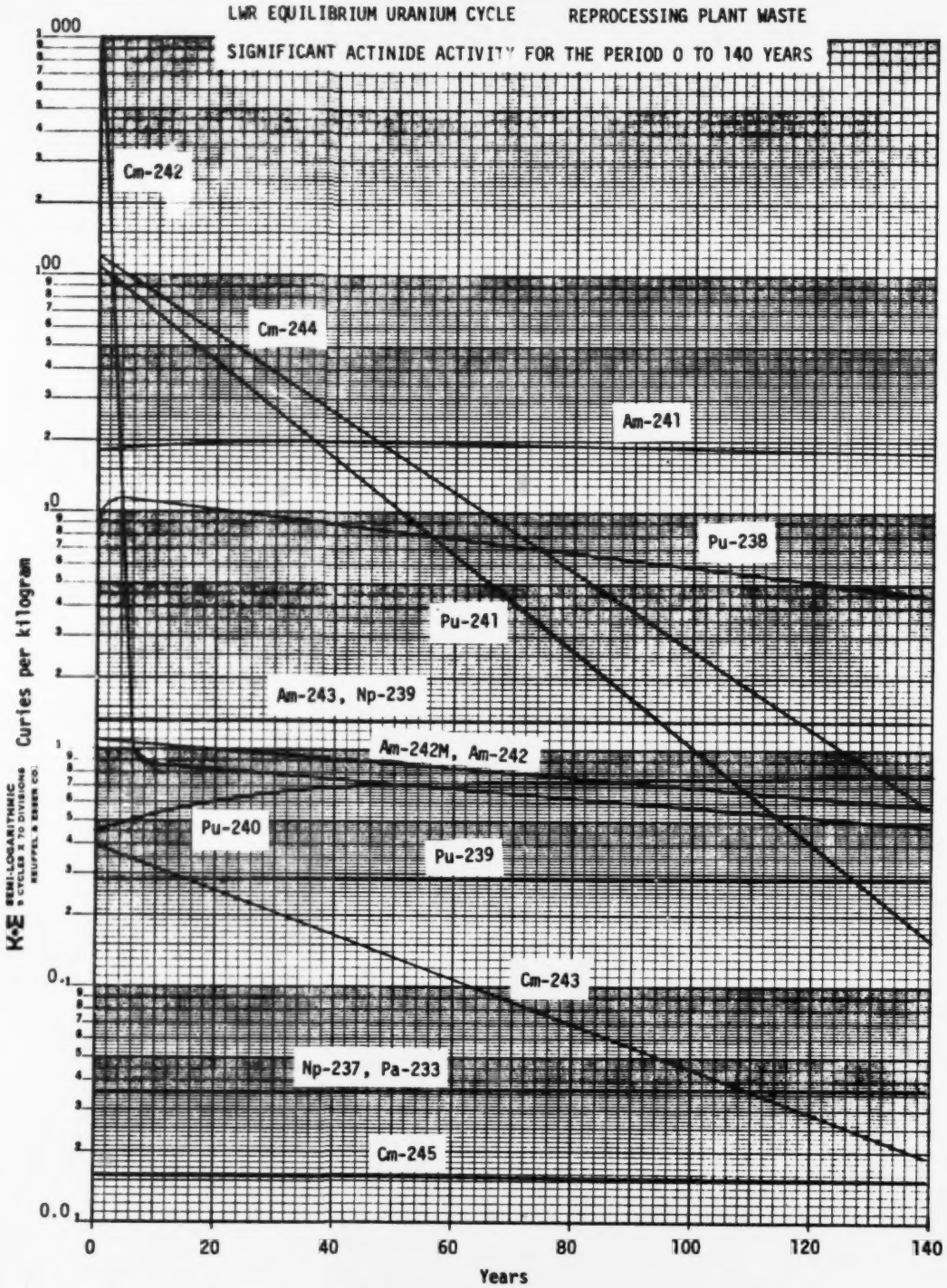

LWR EQUILIBRIUM URANIUM CYCLE REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Curies per kilogram
Years
Cm-242
Cm-244
Am-241
Pu-238
Pu-241
Am-243, Np-239
Am-242M, Am-242
Pu-240
Pu-239
Cm-243
Np-237, Pa-233
Cm-245
1,000
100
10
1
0.1
0.01
0
20
40
60
80
100
120
140

FIGURE 7

LWR EQUILIBRIUM URANIUM CYCLE REPROCESSING PLANT WASTE

SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS

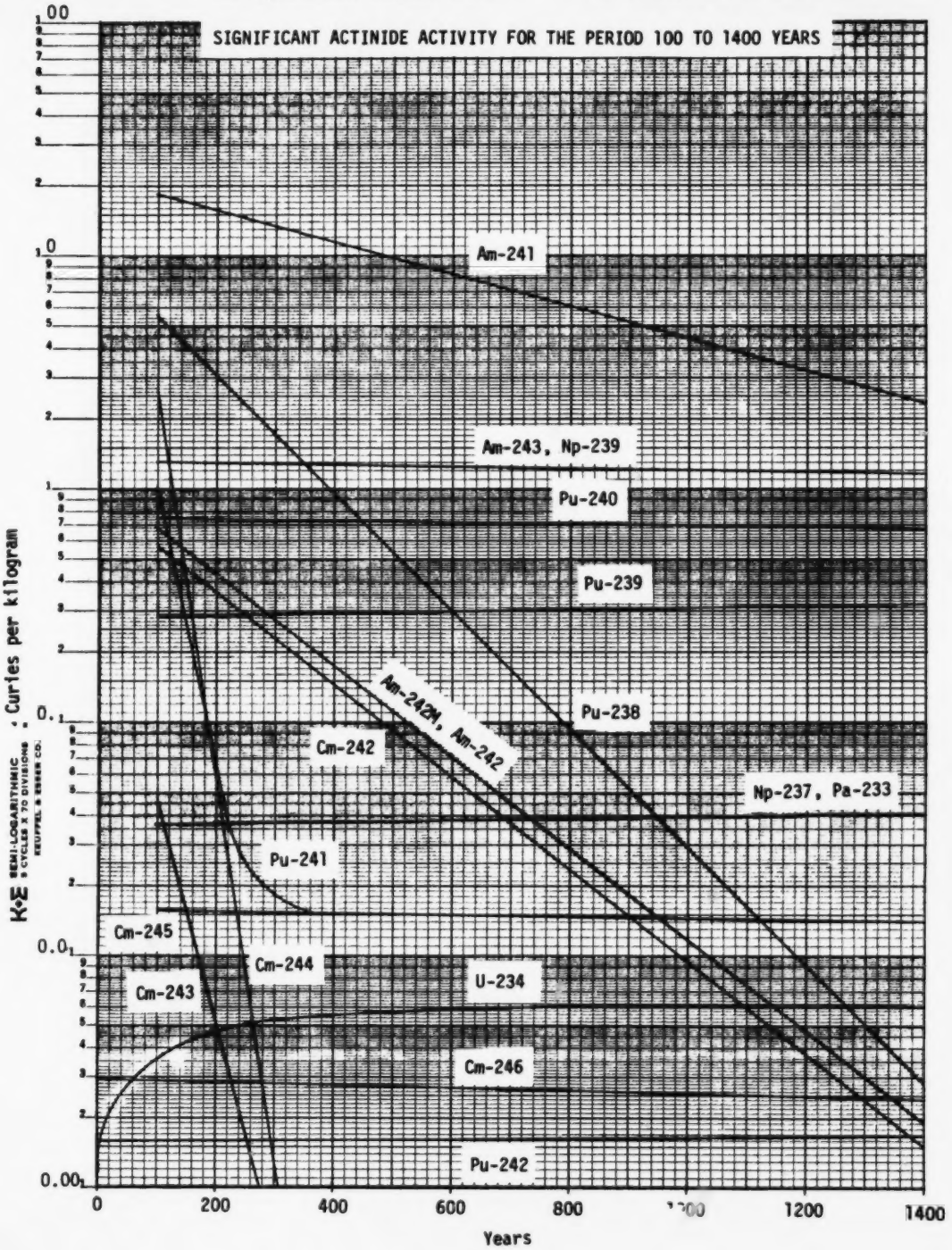


FIGURE 8

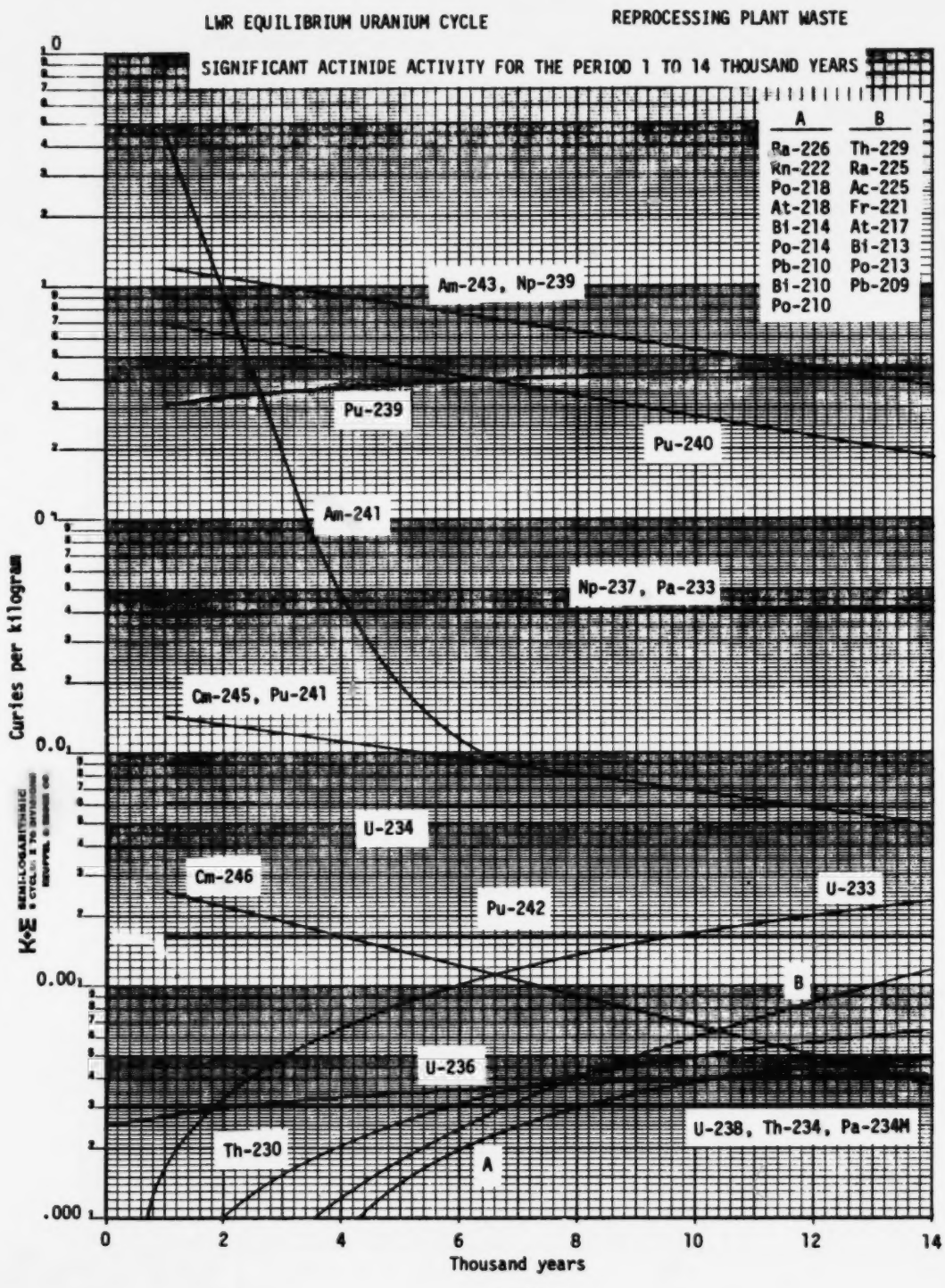

LWR EQUILIBRIUM URANIUM CYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
Am-243, Np-239
Pu-239
Pu-240
Am-241
Np-237, Pa-233
Cm-245, Pu-241
U-234
Cm-246
Pu-242
U-233
B
U-236
U-238, Th-234, Pa-234M
Th-230
A
Curies per kilogram
0
0.1
0.01
0.001
0
2
4
6
8
10
12
14
Thousand years

FIGURE 9

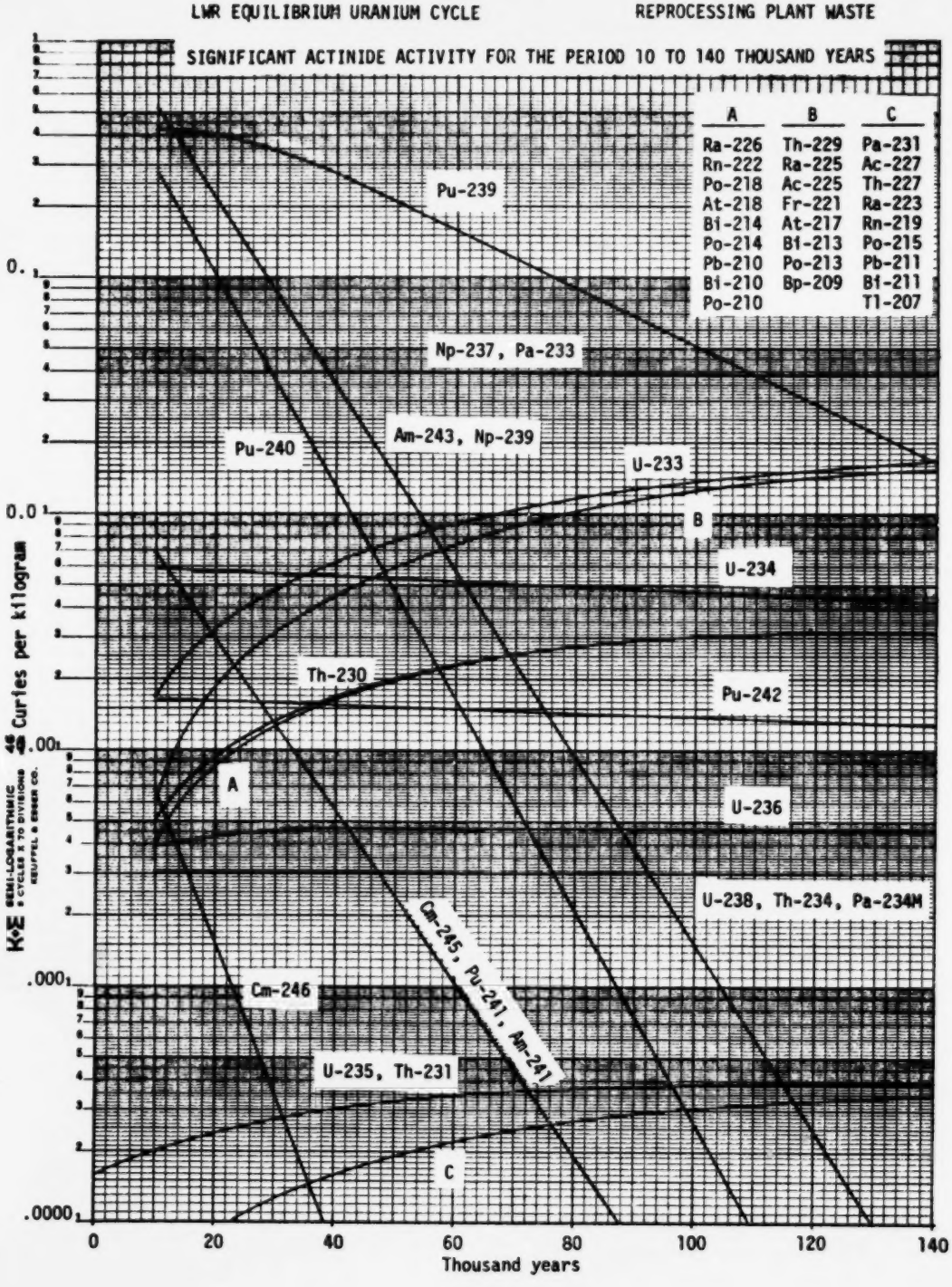

LWR EQUILIBRIUM URANIUM CYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-239
Np-237, Pa-233
Pu-240
Am-243, Np-239
U-233
B
U-234
Th-230
Pu-242
A
U-236
U-238, Th-234, Pa-234M
Cm-245, Pu-241, Am-241
Cm-246
U-235, Th-231
C
0.
0.0
.000
.0000
Curies per kilogram
0
20
40
60
80
100
120
140
Thousand years
KE SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS KEUFFEL & ESSER CO.

FIGURE 10

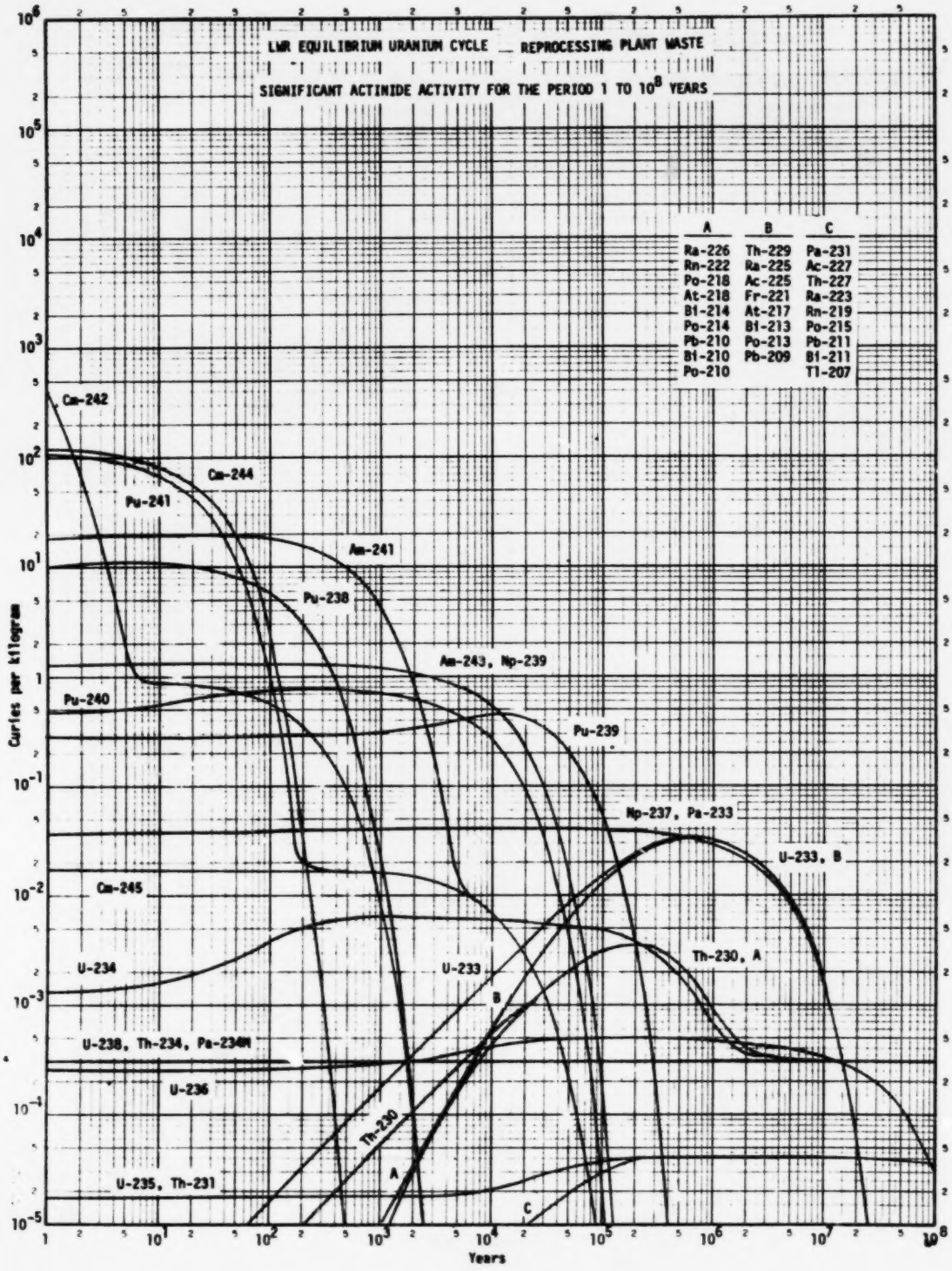

LWR EQUILIBRIUM URANIUM CYCLE — REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Cm-242
Cm-244
Pu-241
Am-241
Pu-238
Am-243, Np-239
Pu-240
Pu-239
Np-237, Pa-233
U-233, B
Cm-245
U-234
U-233
B
Th-230, A
U-238, Th-234, Pa-234M
U-236
Th-230
A
U-235, Th-231
C
Curies per kilogram
Years

FIGURE 11

LWR EQUILIBRIUM URANIUM CYCLE PLUTONIUM

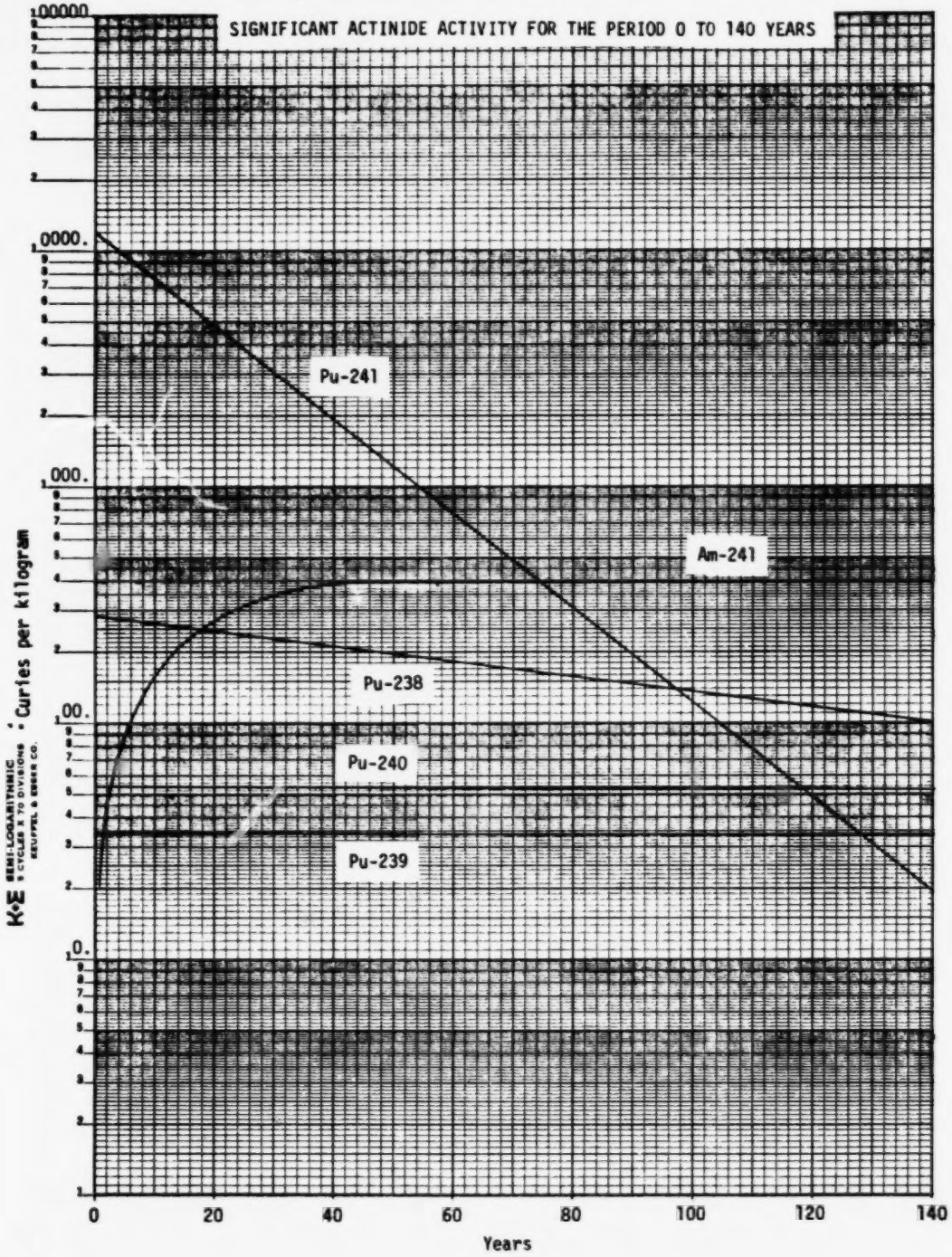


FIGURE 12

LWR EQUILIBRIUM URANIUM CYCLE PLUTONIUM

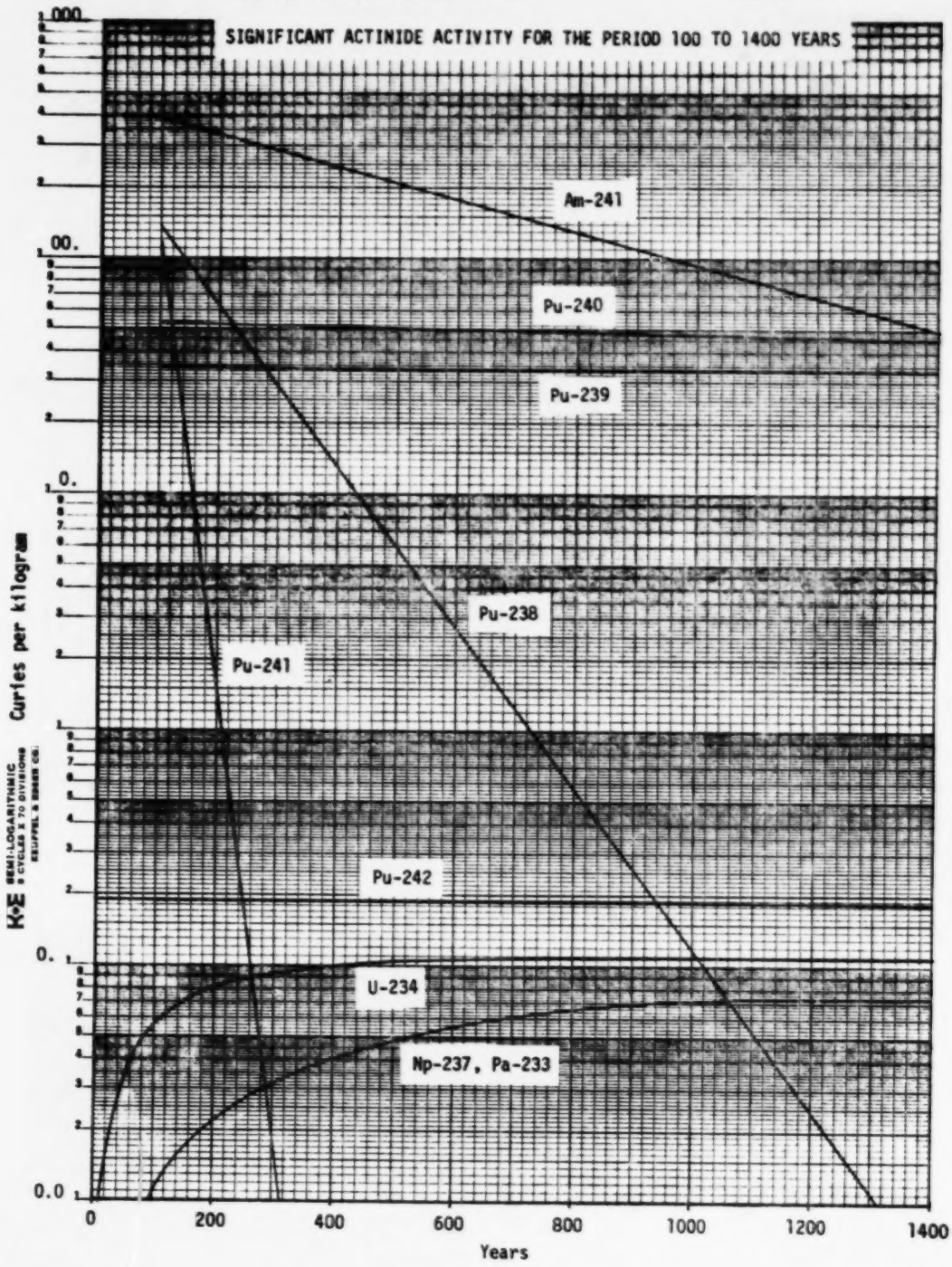


FIGURE 13

LWR EQUILIBRIUM URANIUM CYCLE PLUTONIUM

SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS

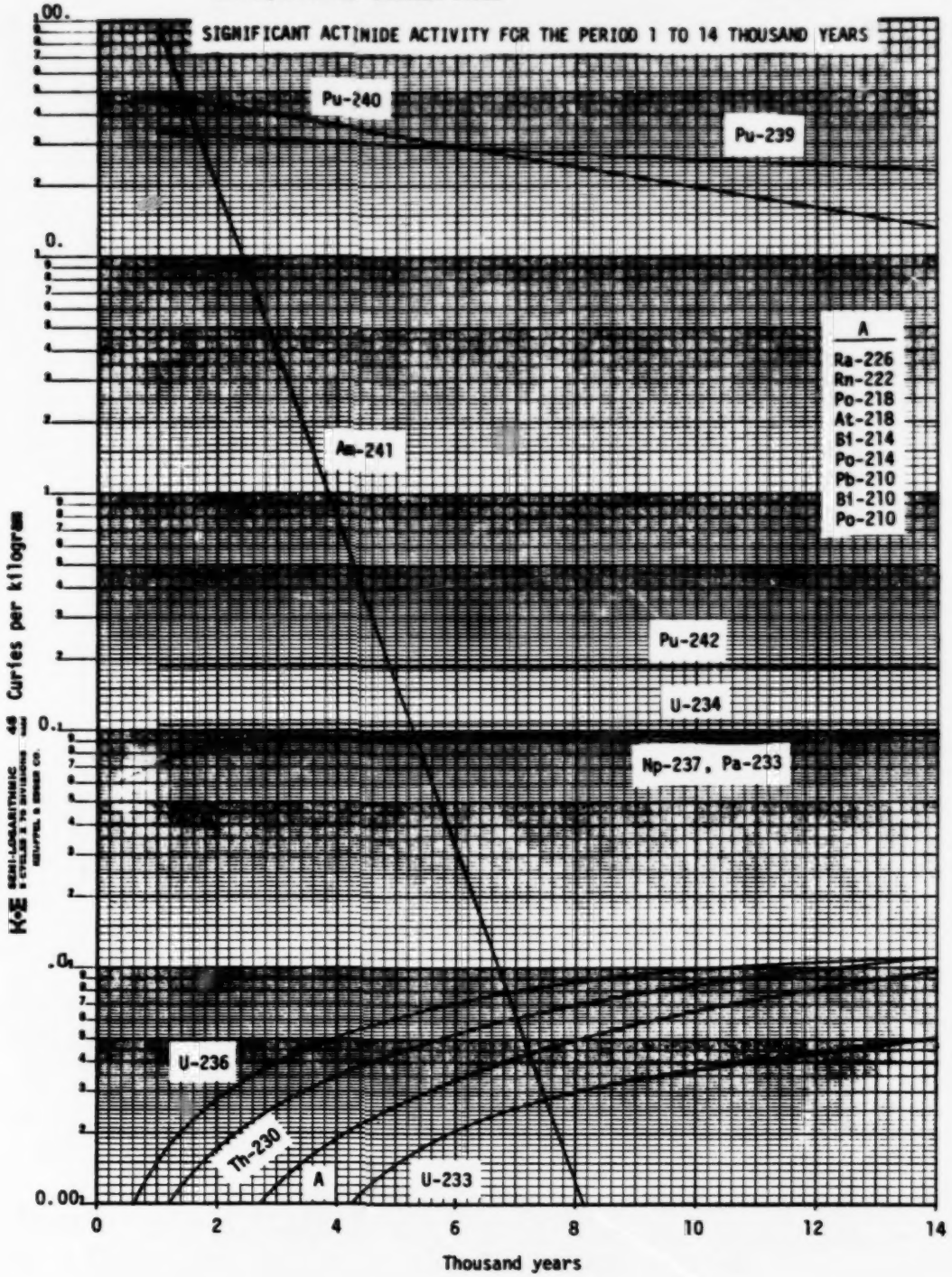


FIGURE 14

LWR EQUILIBRIUM URANIUM CYCLE PLUTONIUM

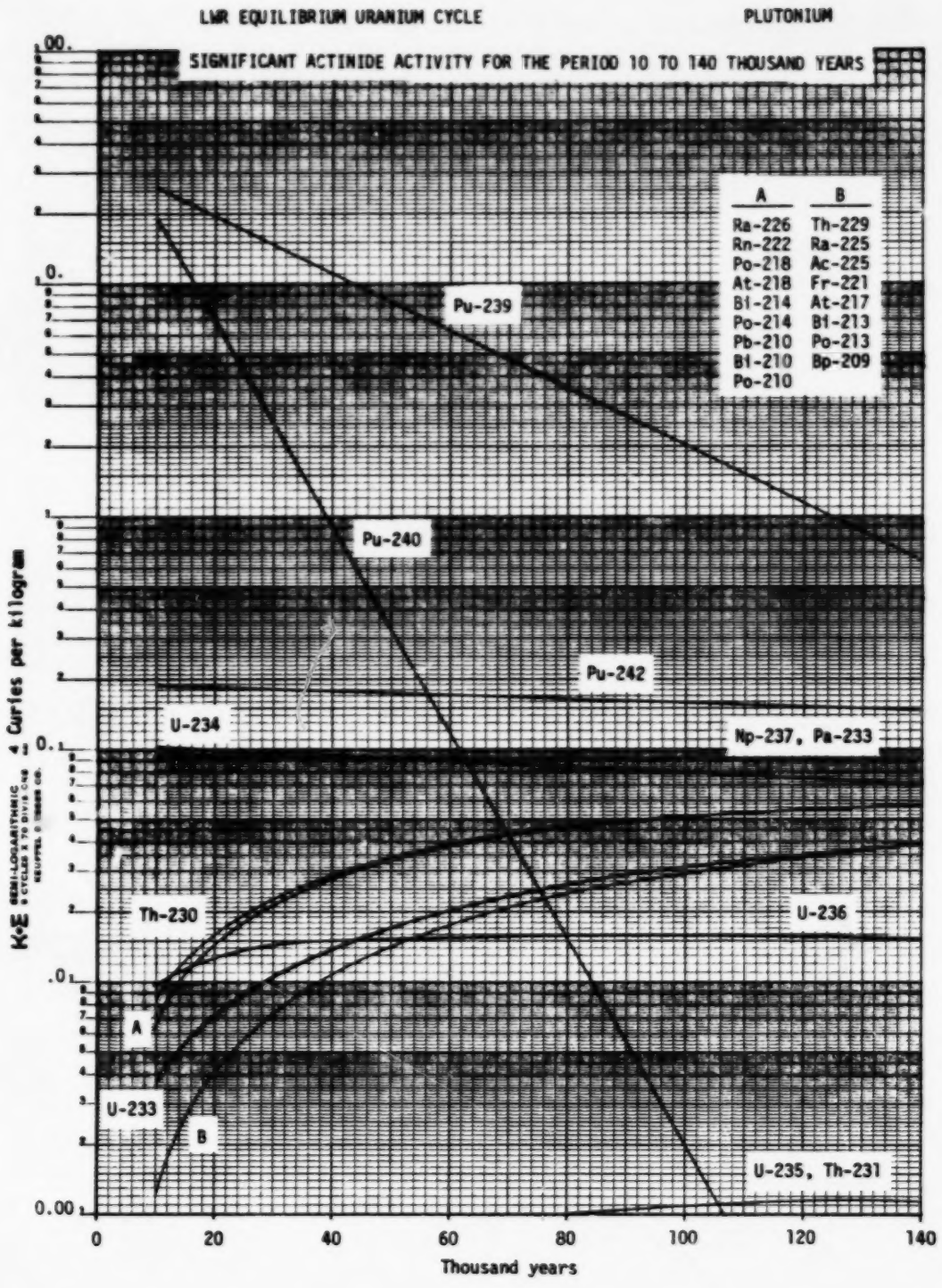


FIGURE 15

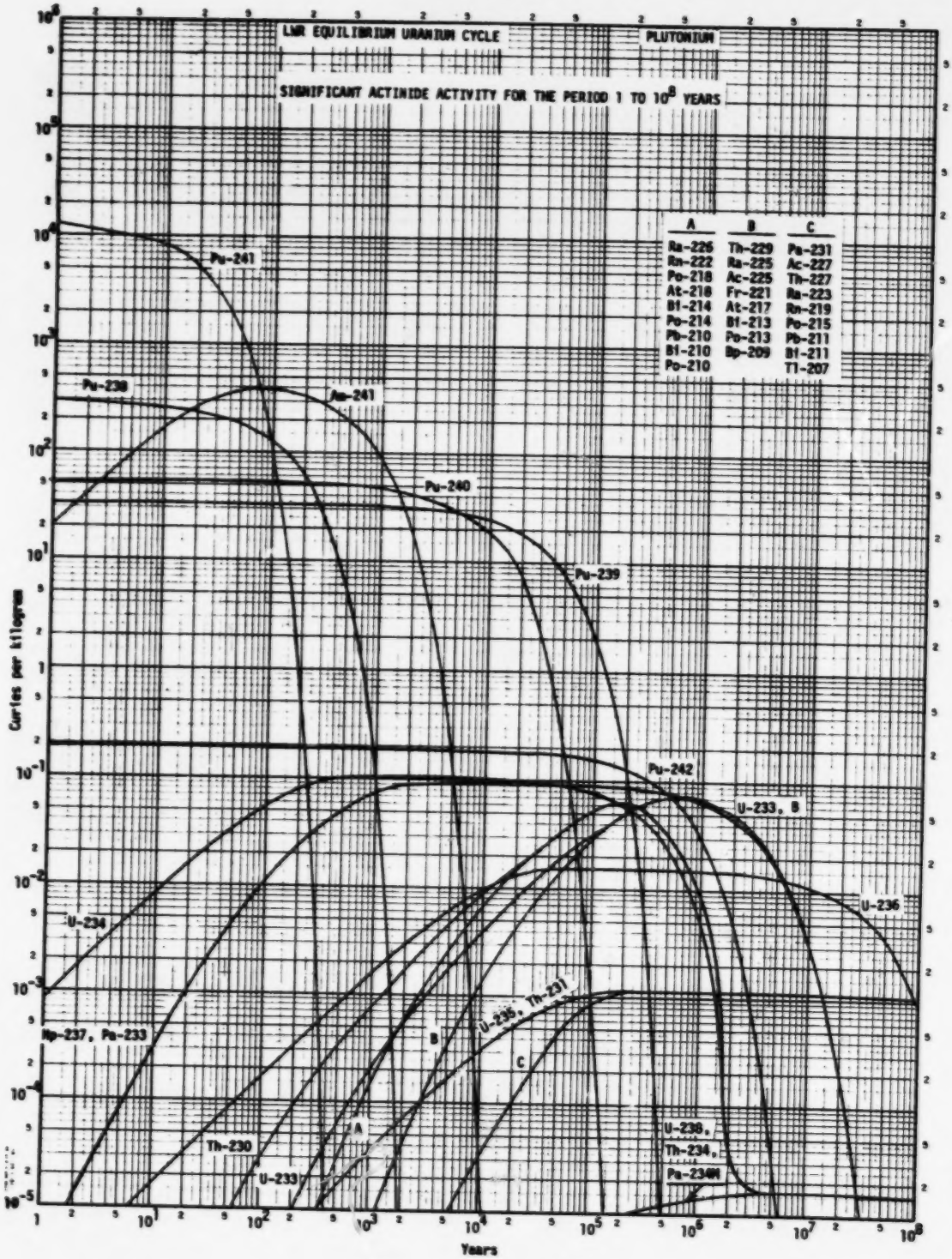

LMR EQUILIBRIUM URANIUM CYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-241
Pu-238
Am-241
Pu-240
Pu-239
Pu-242
U-233, B
U-236
U-234
Np-237, Pa-233
B
U-235, Th-231
C
A
Th-230
U-233
U-238, Th-234, Pa-234M
Curies per kilogram
Years

FIGURE 16

LWR FIRST PLUTONIUM RECYCLE SPENT FUEL

SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS

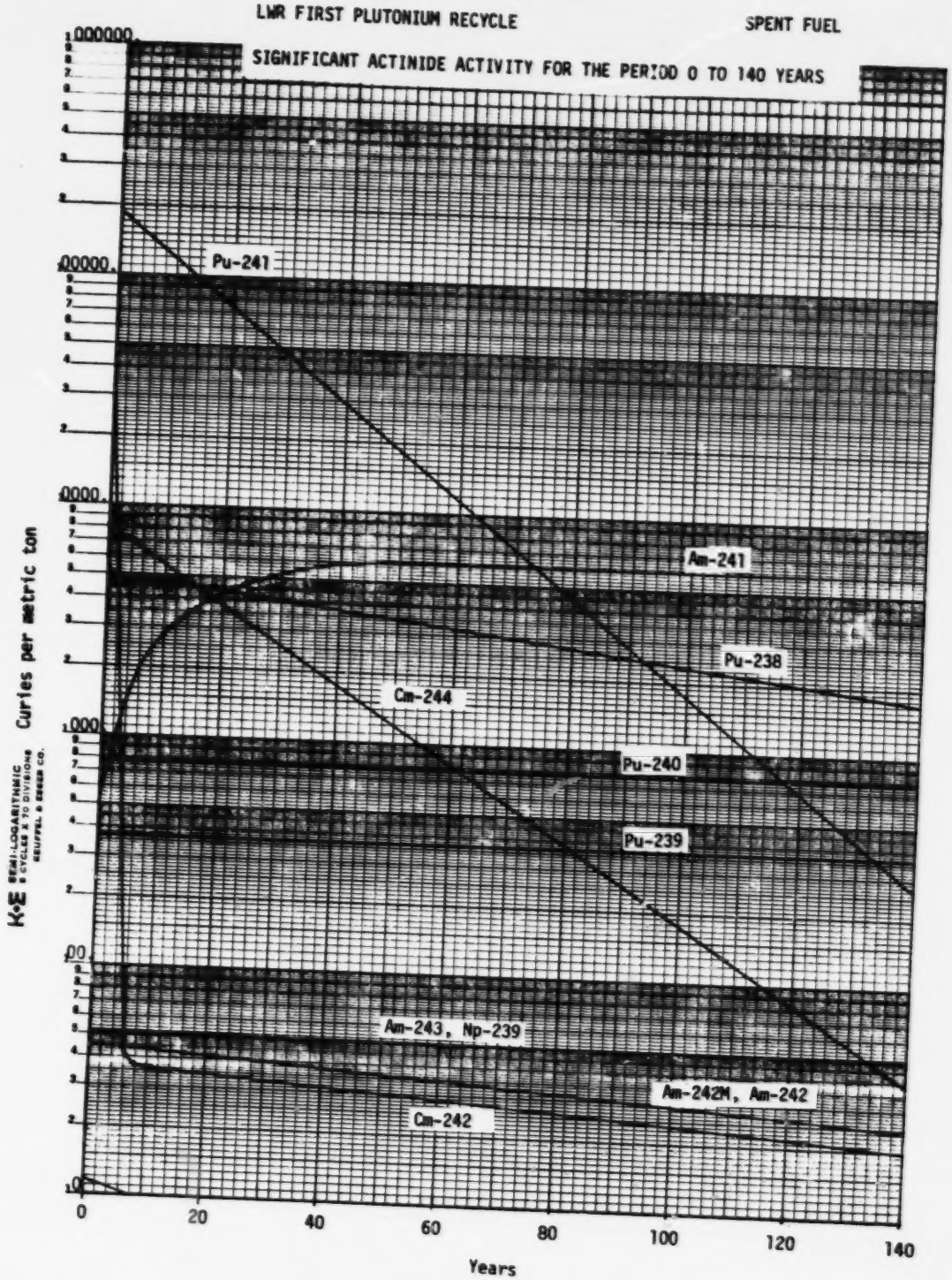


FIGURE 1.

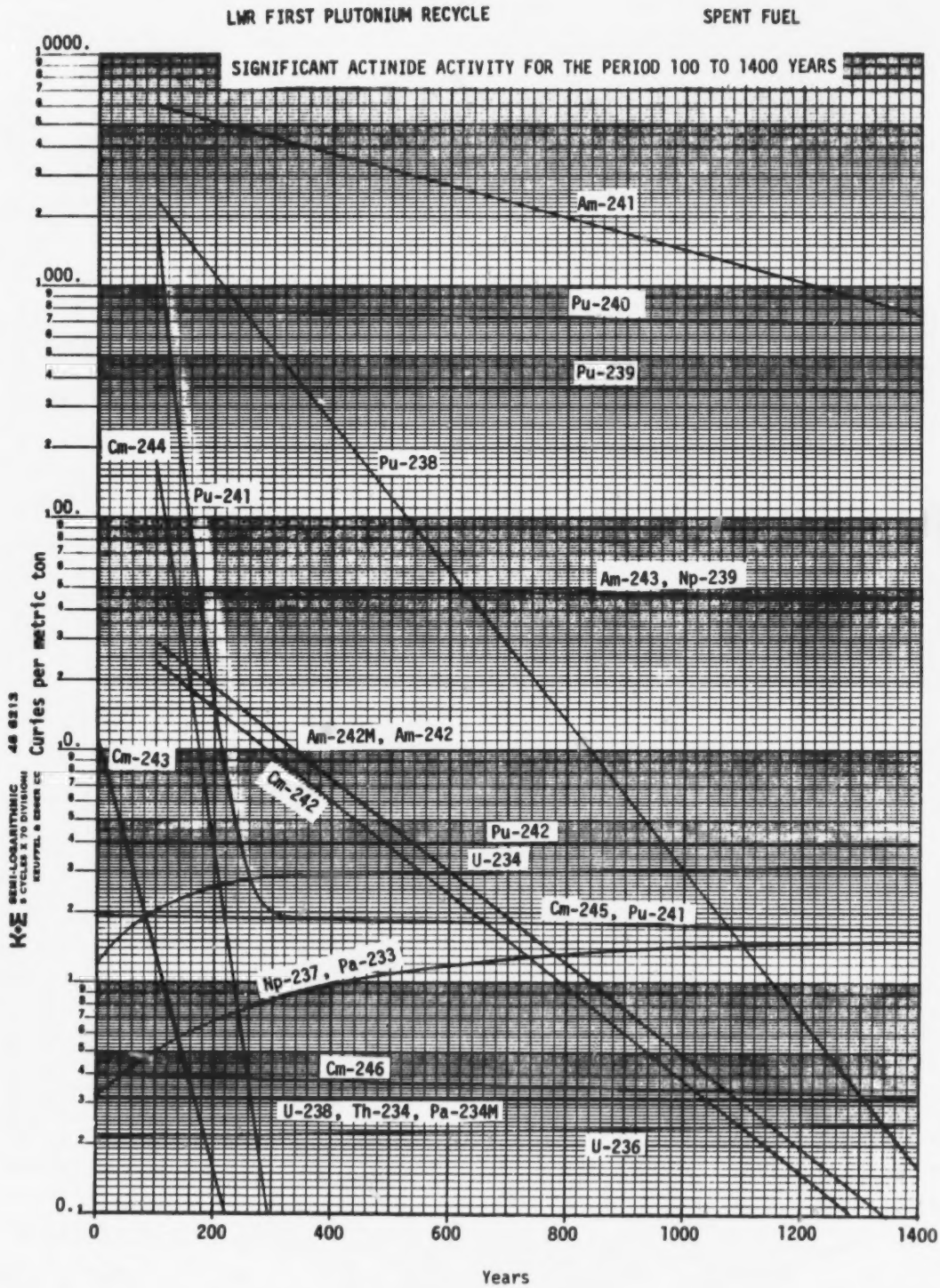

LWR FIRST PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS
Curies per metric ton
Years
Am-241
Pu-240
Pu-239
Cm-244
Pu-238
Pu-241
Am-243, Np-239
Am-242M, Am-242
Cm-243
Cm-242
Pu-242
U-234
Cm-245, Pu-241
Np-237, Pa-233
Cm-246
U-238, Th-234, Pa-234M
U-236
0
200
400
600
800
1000
1200
1400

FIGURE 18

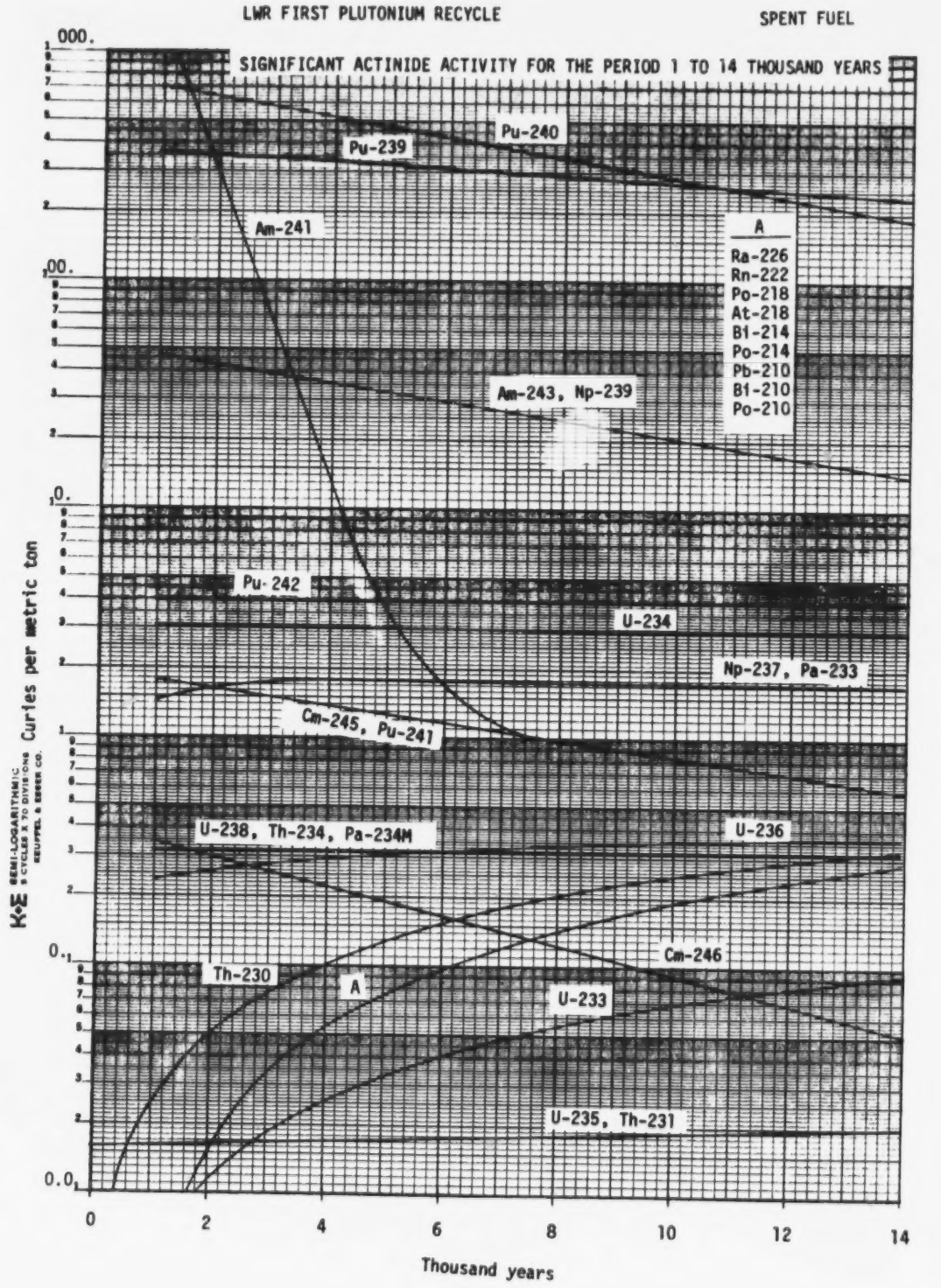

LWR FIRST PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Curies per metric ton
Thousand years
Pu-240
Pu-239
Am-241
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
Am-243, Np-239
Pu-242
U-234
Np-237, Pa-233
Cm-245, Pu-241
U-238, Th-234, Pa-234M
U-236
Cm-246
Th-230
A
U-233
U-235, Th-231
000.
00.
0.
0.1
0.0
0
2
4
6
8
10
12
14

FIGURE 19

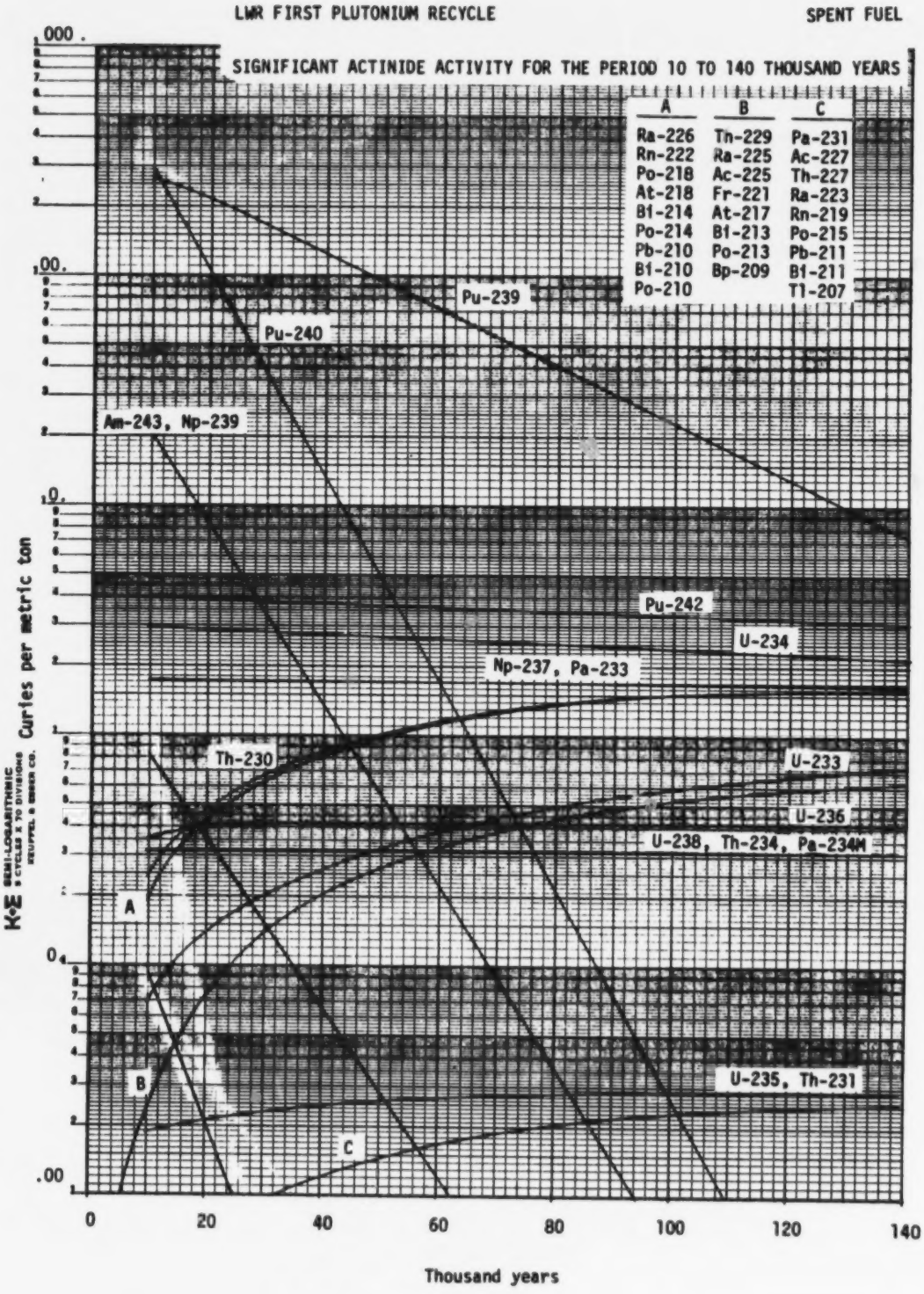

LWR FIRST PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-239
Pu-240
Am-243, Np-239
Pu-242
U-234
Np-237, Pa-233
Th-230
U-233
U-236
U-238, Th-234, Pa-234M
U-235, Th-231
A
B
C
000.
00.
0.
0
.00
Curies per metric ton
0
20
40
60
80
100
120
140
Thousand years

FIGURE 20

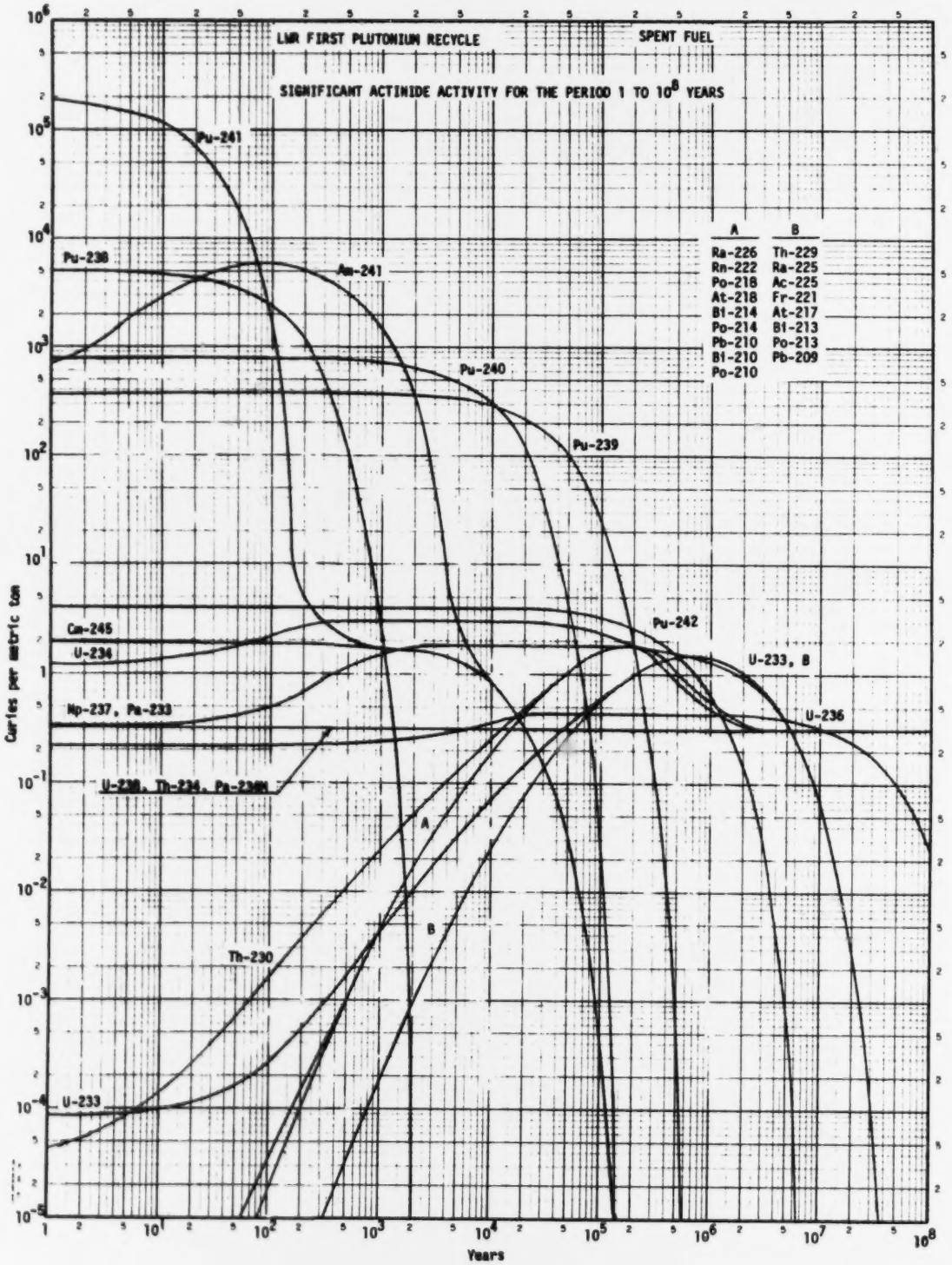

LMR FIRST PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
Curies per metric ton
Years
Pu-241
Pu-238
Am-241
Pu-240
Pu-239
Pu-242
Cm-245
U-234
U-233, B
Np-237, Pa-233
U-236
U-238, Th-234, Pa-234M
A
B
Th-230
U-233
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209

FIGURE 21

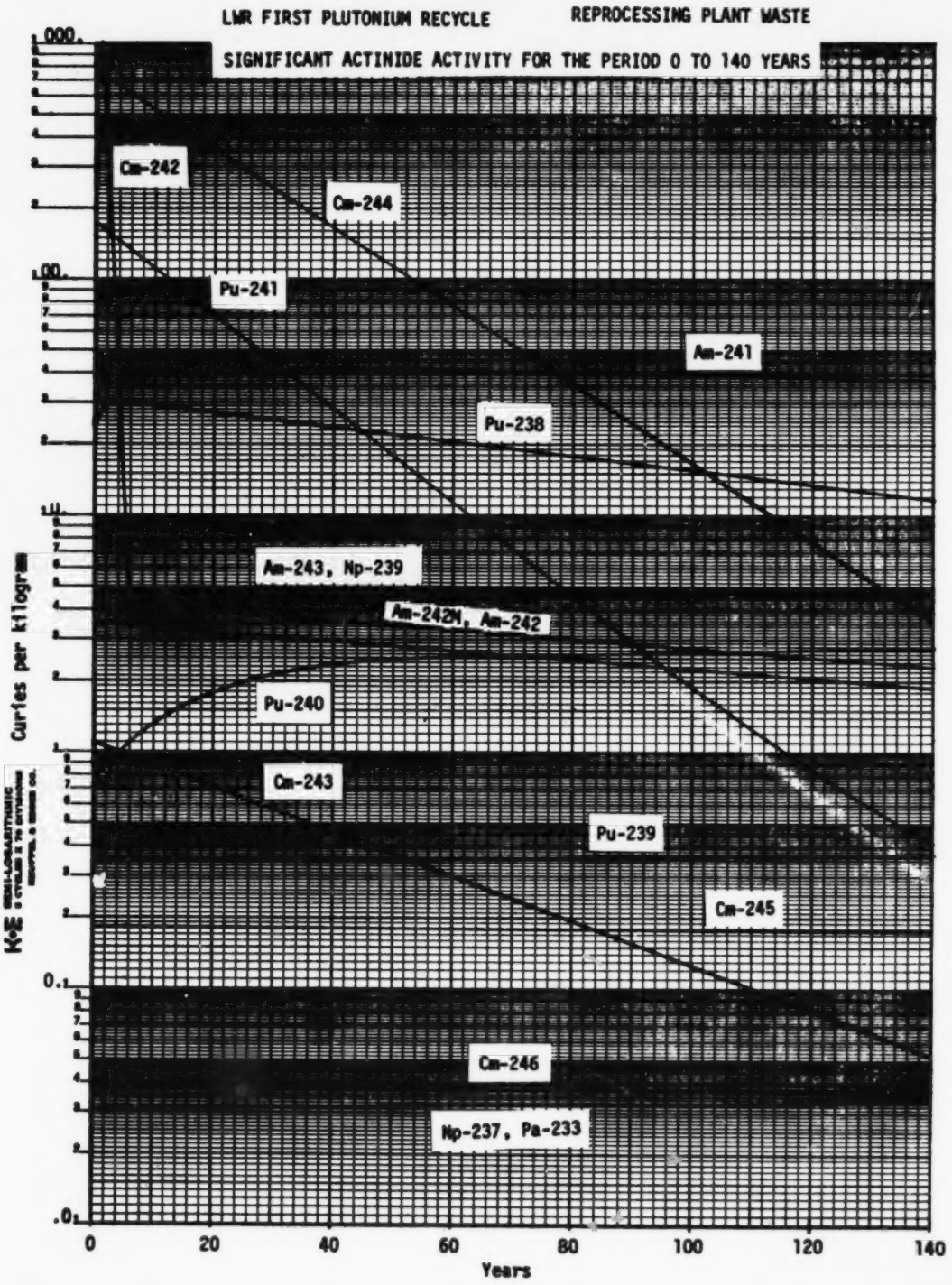

LWR FIRST PLUTONIUM RECYCLE REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Cm-242
Cm-244
Pu-241
Am-241
Pu-238
Am-243, Np-239
Am-242M, Am-242
Pu-240
Cm-243
Pu-239
Cm-245
Cm-246
Np-237, Pa-233
Curies per kilogram
0.1
.0
0
20
40
60
80
100
120
140
Years

FIGURE 22

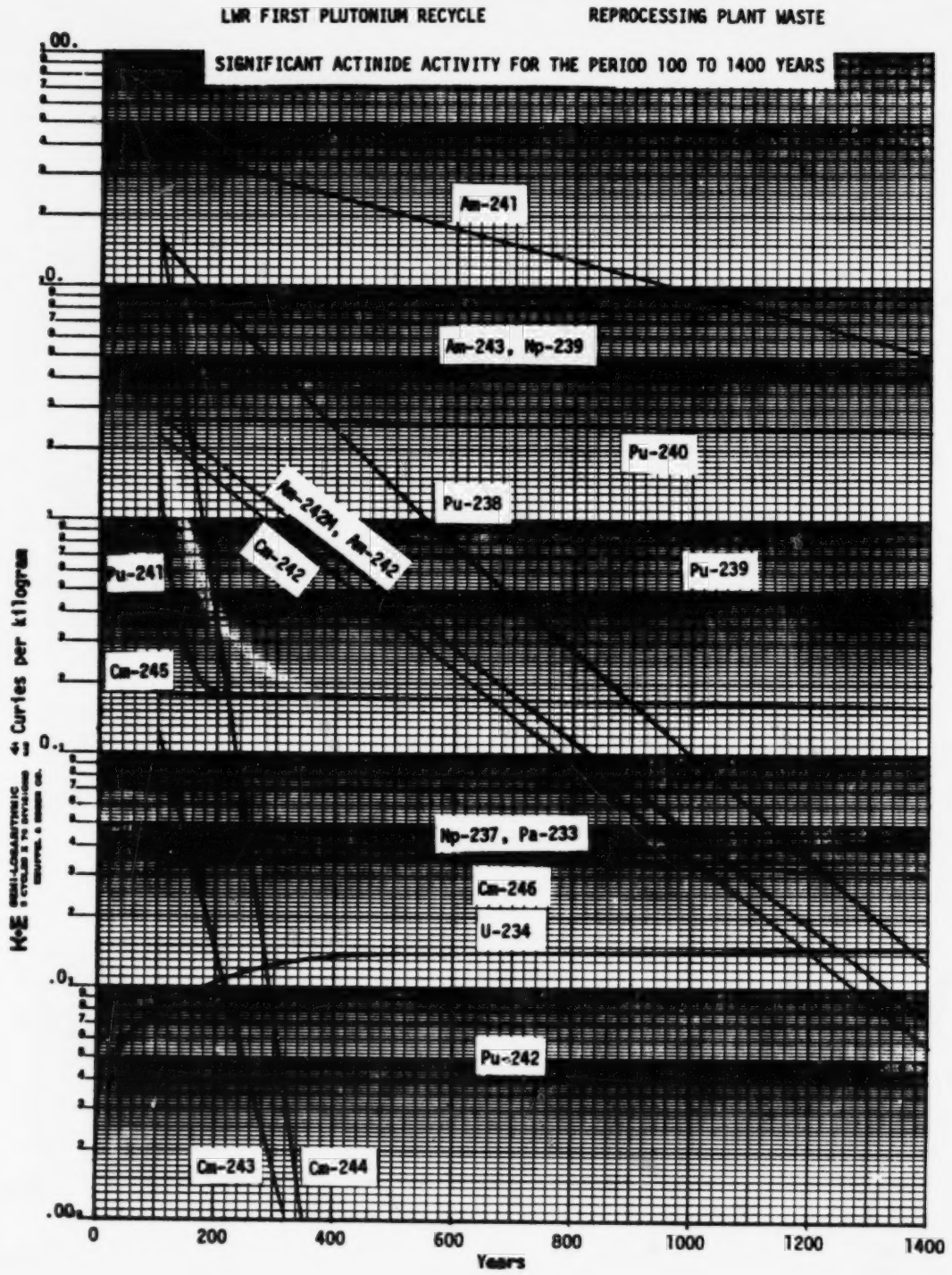

LWR FIRST PLUTONIUM RECYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS
Am-241
Am-243, Np-239
Pu-240
Pu-238
Am-242M, Am-242
Cm-242
Pu-241
Pu-239
Cm-245
Np-237, Pa-233
Cm-246
U-234
Pu-242
Cm-243
Cm-244
Curies per kilogram
0
200
400
600
800
1000
1200
1400
Years

FIGURE 23

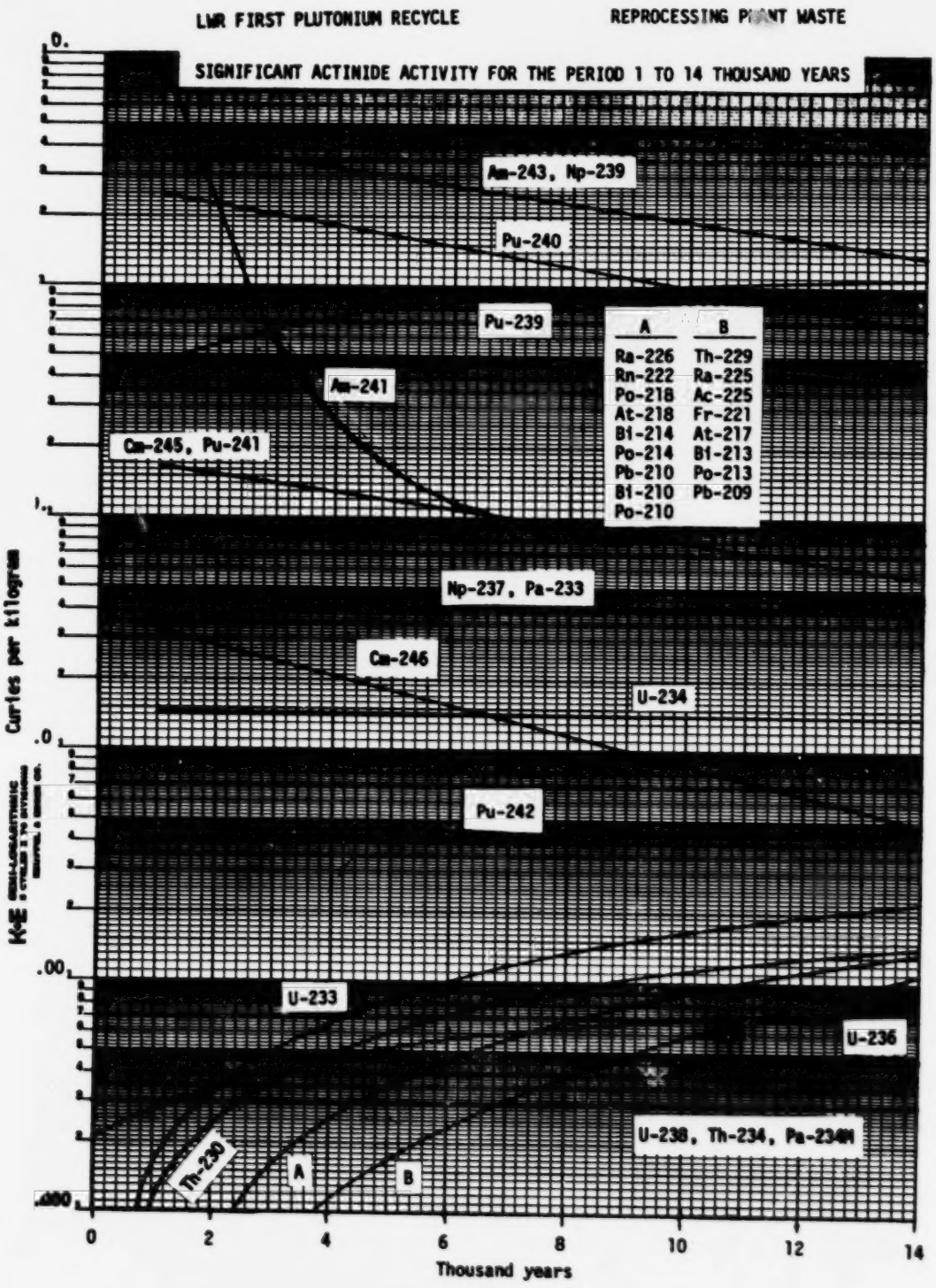

LWR FIRST PLUTONIUM RECYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Curies per kilogram
0.
.1
.0
.00
.000
Am-243, Np-239
Pu-240
Pu-239
Am-241
Cm-245, Pu-241
Np-237, Pa-233
Cm-246
U-234
Pu-242
U-233
U-236
U-238, Th-234, Pa-234M
Th-230
A
B
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
0
2
4
6
8
10
12
14
Thousand years

FIGURE 24

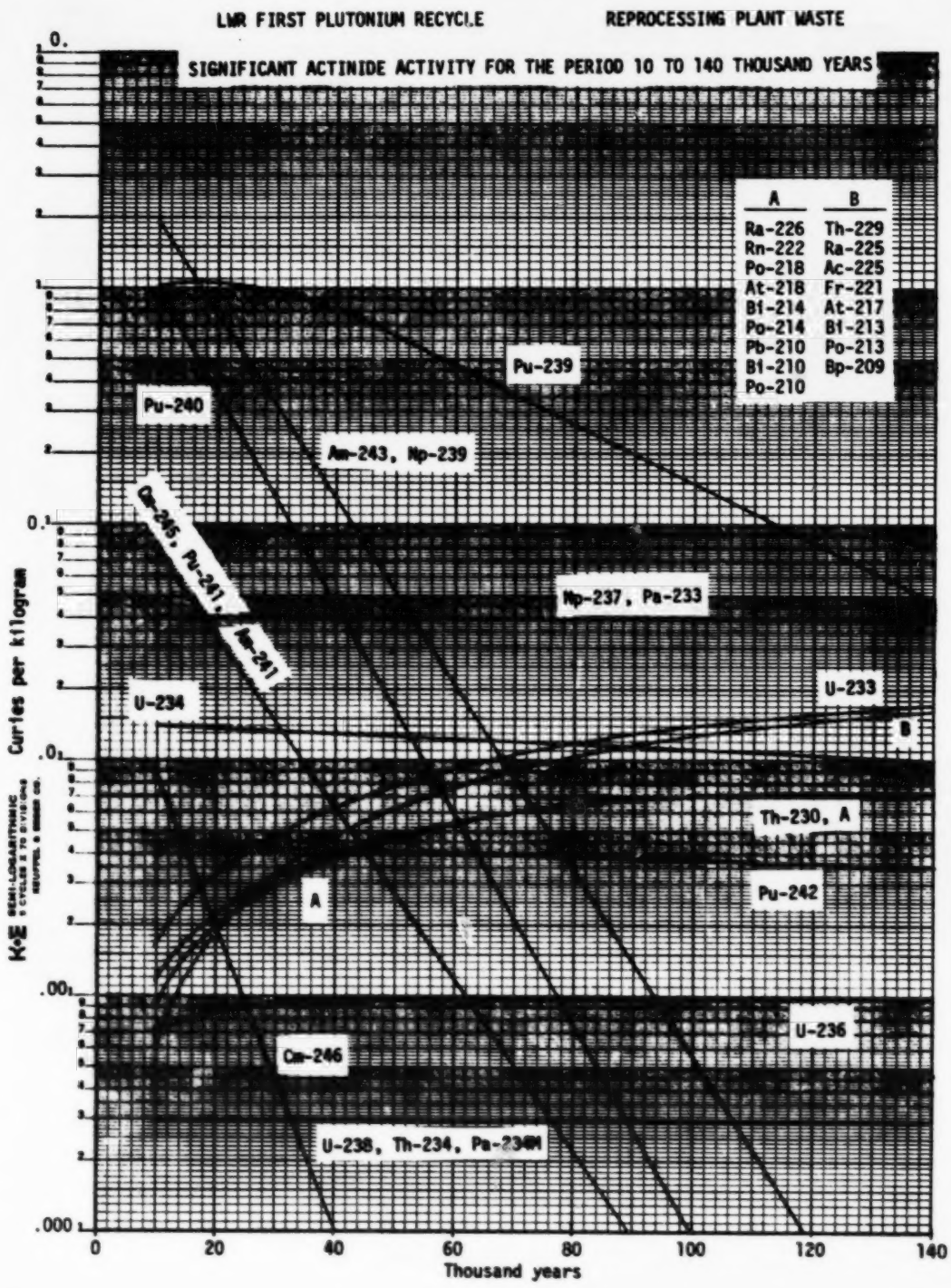

LWR FIRST PLUTONIUM RECYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
Pu-239
Pu-240
Am-243, Np-239
Cm-245, Pu-241, Am-241
Np-237, Pa-233
U-234
U-233
B
Th-230, A
A
Pu-242
U-236
Cm-246
U-238, Th-234, Pa-234M
Curies per kilogram
0.
0.1
.01
.001
.0001
0
20
40
60
80
100
120
140
Thousand years

FIGURE 25

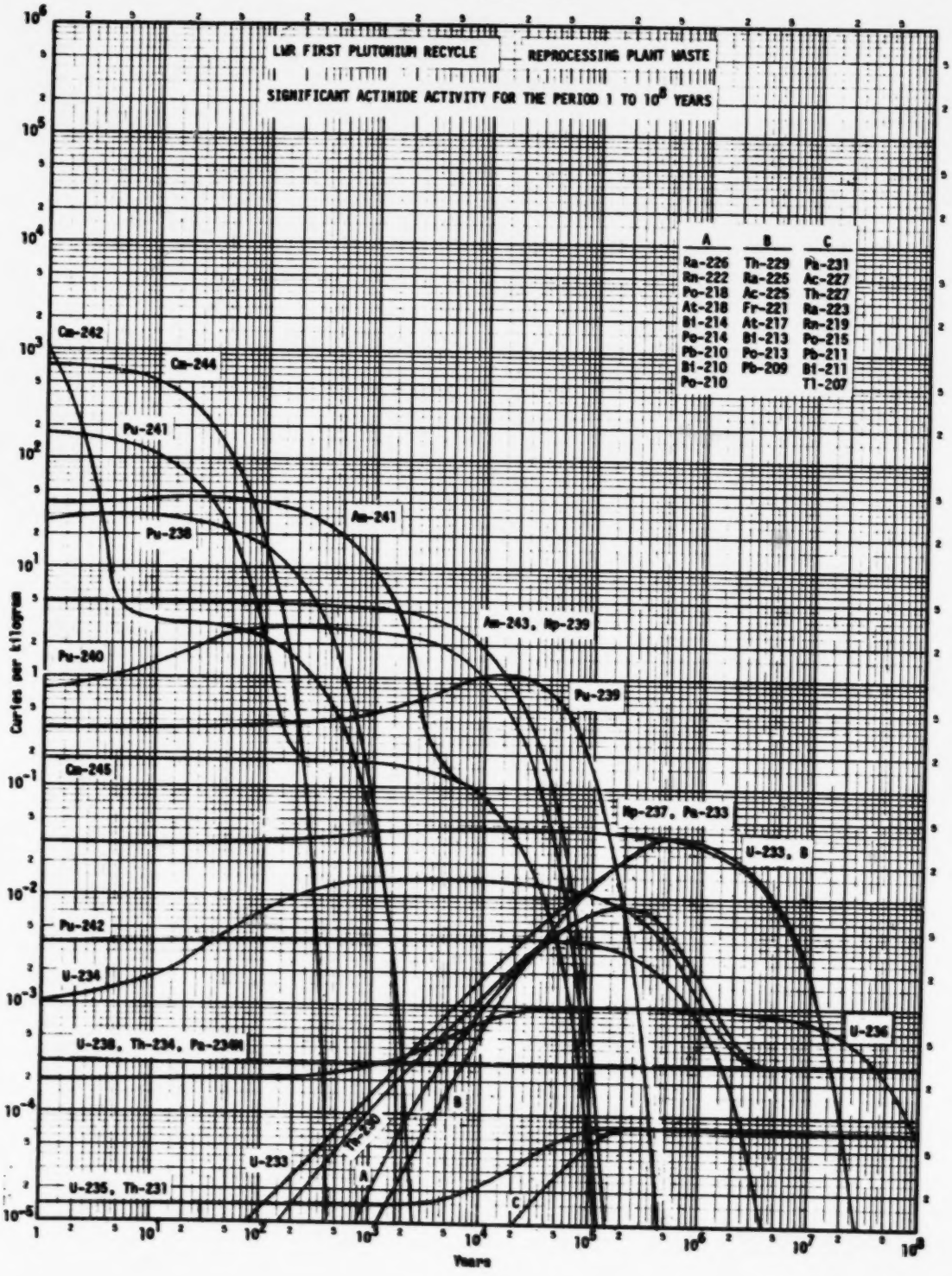

LWR FIRST PLUTONIUM RECYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Cm-242
Cm-244
Pu-241
Am-241
Pu-238
Am-243, Np-239
Pu-240
Pu-239
Cm-245
Np-237, Pa-233
U-233, B
Pu-242
U-234
U-236
U-238, Th-234, Pa-234M
U-233
Th-229
A
B
C
U-235, Th-231
Curies per kilogram
Years

FIGURE 26

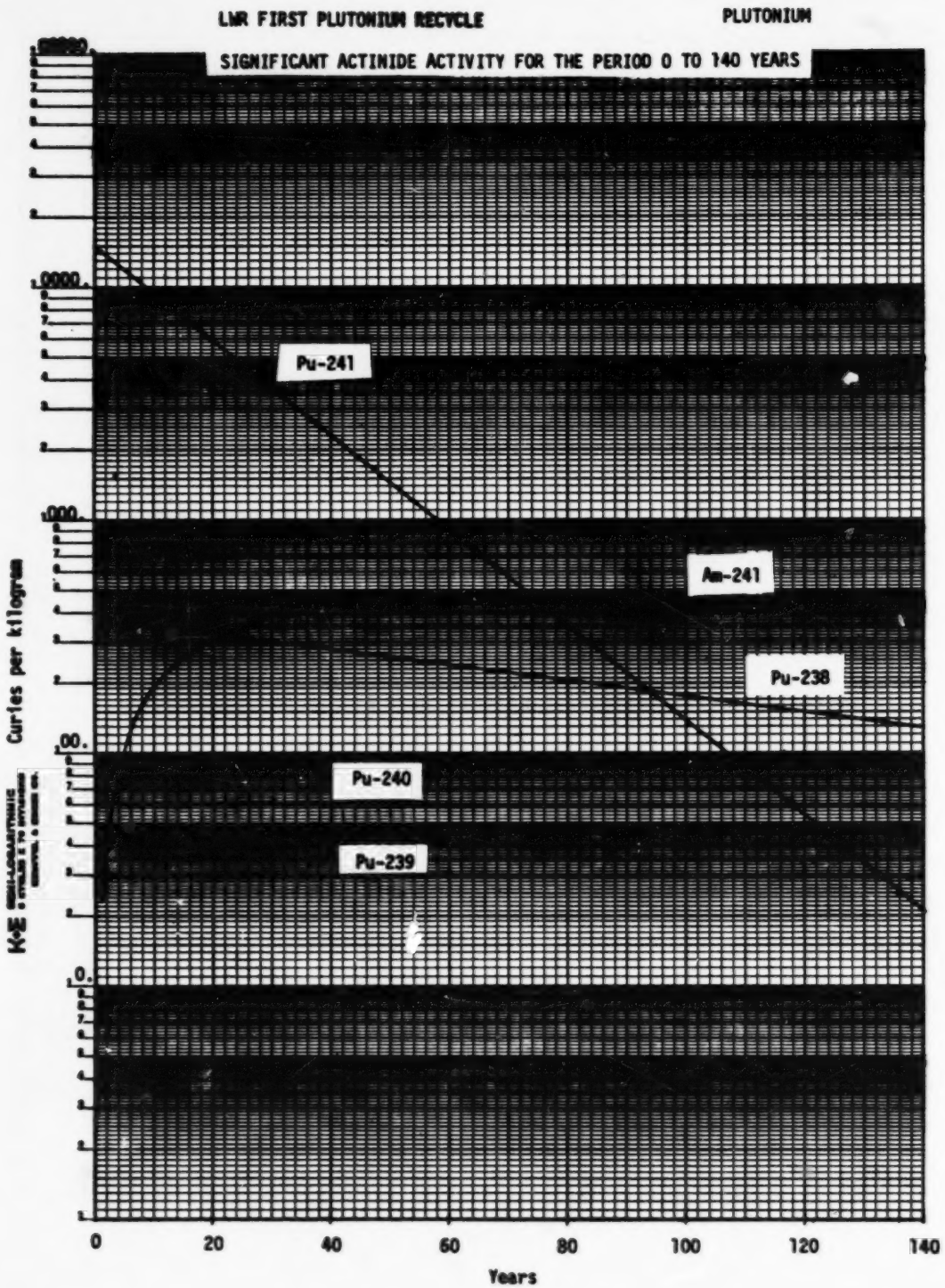

LMR FIRST PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Pu-241
Am-241
Pu-238
Pu-240
Pu-239
Curies per kilogram
0
20
40
60
80
100
120
140
Years

FIGURE 27

LWR FIRST PLUTONIUM RECYCLE

PLUTONIUM

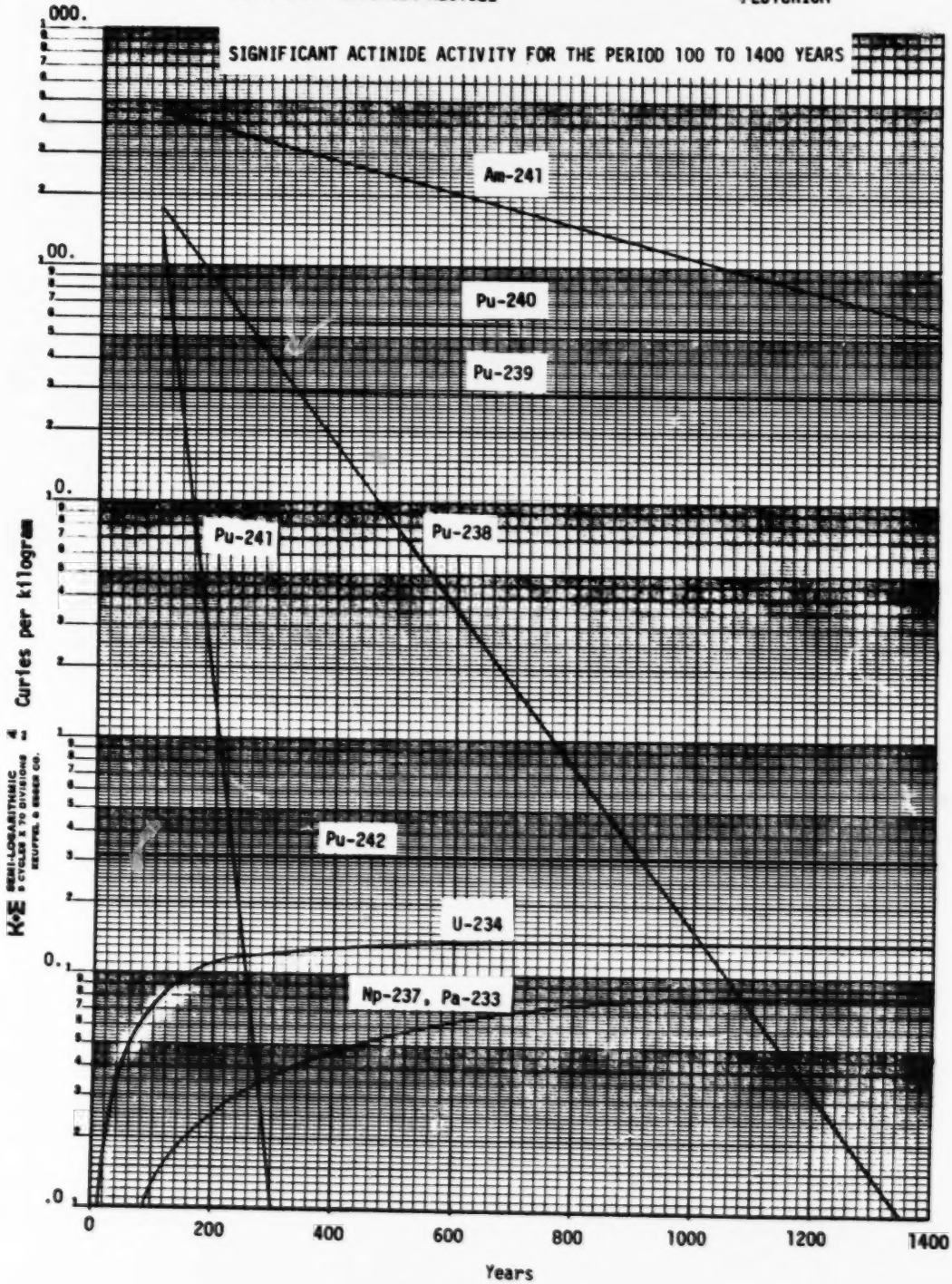


FIGURE 28

LWR FIRST PLUTONIUM RECYCLE

PLUTONIUM

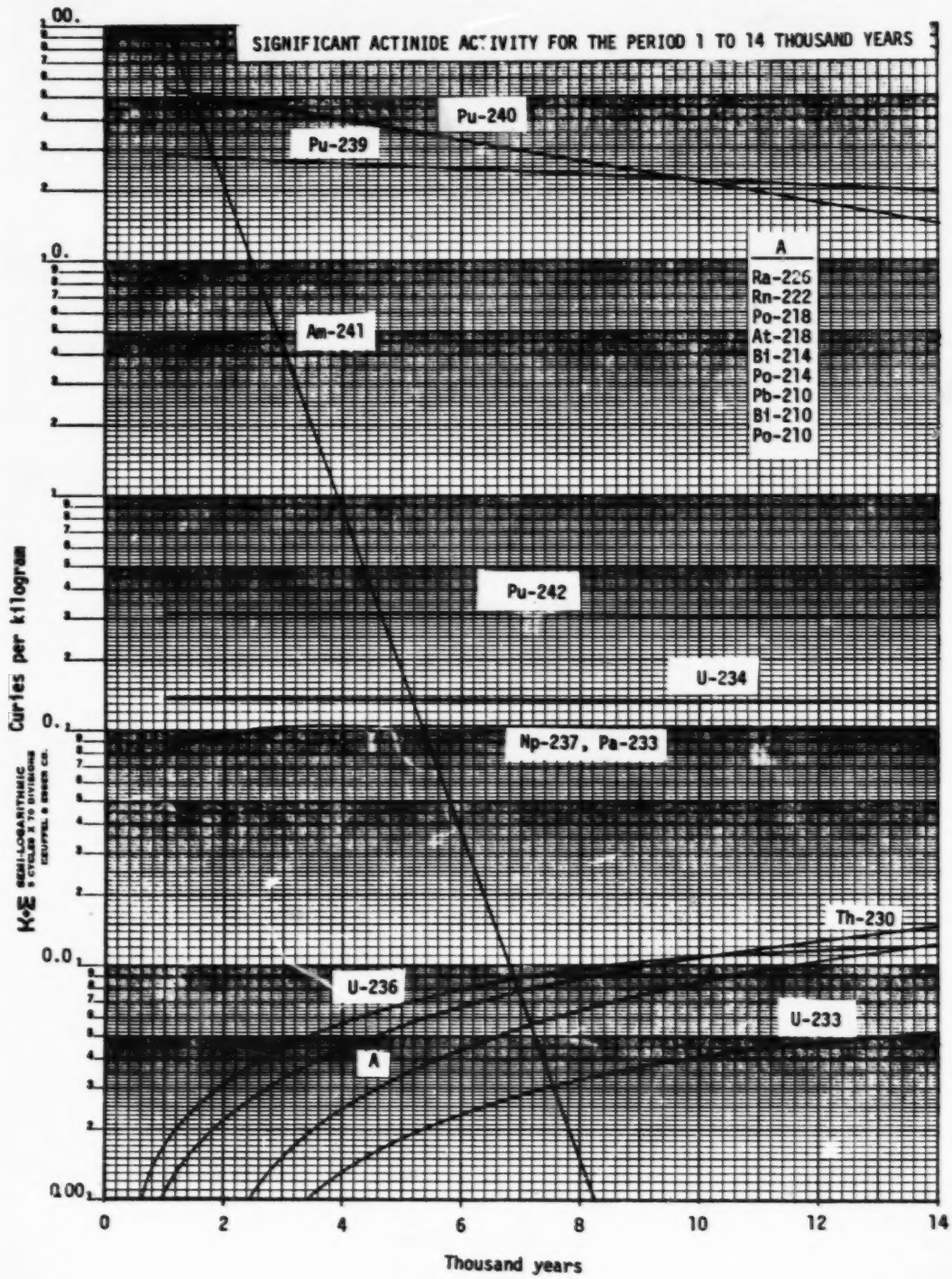


FIGURE 29

LWR FIRST PLUTONIUM RECYCLE

PLUTONIUM

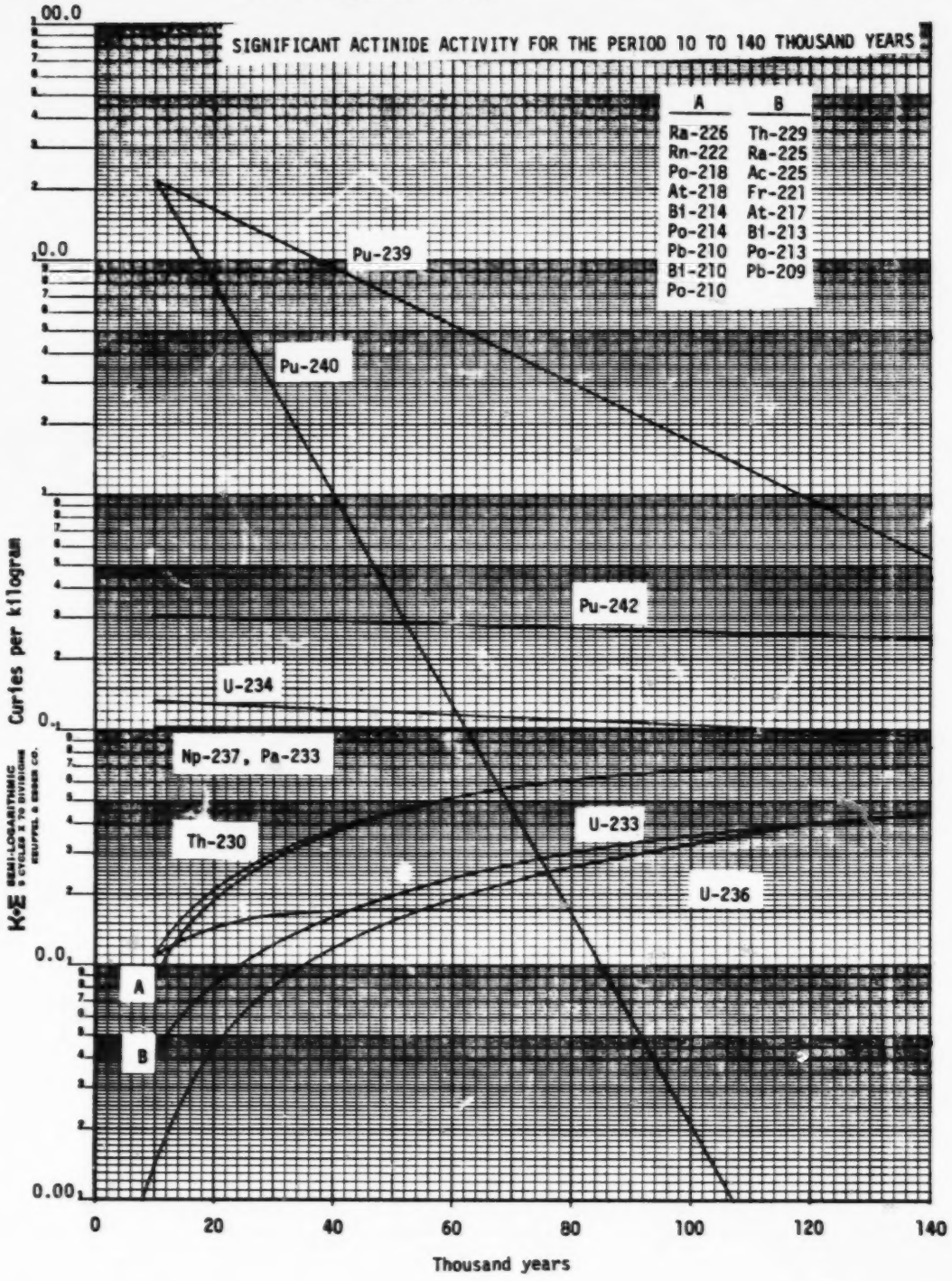


FIGURE 30

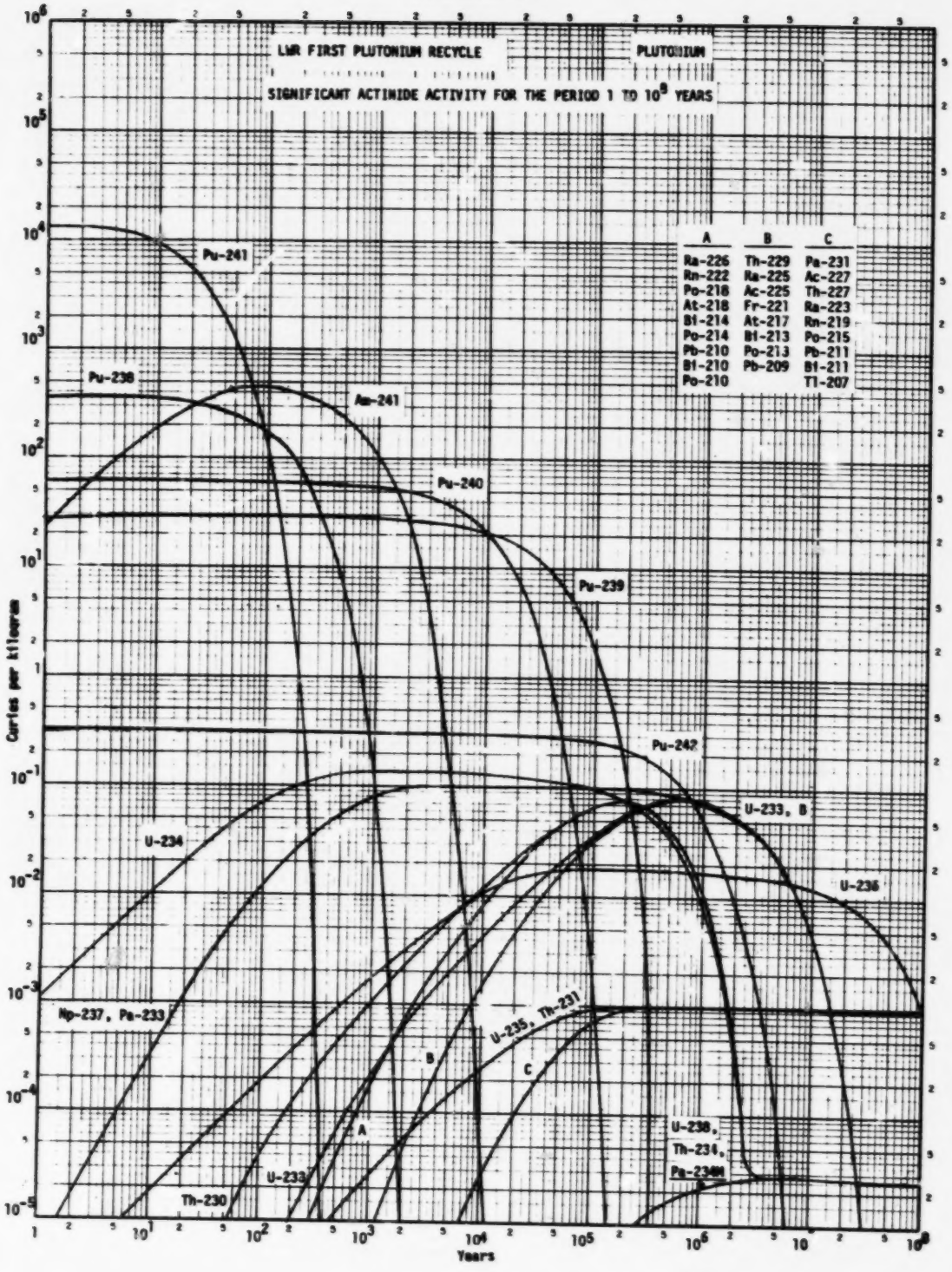

LMR FIRST PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-241
Pu-238
Am-241
Pu-240
Pu-239
Pu-242
U-233, B
U-234
U-236
Np-237, Pa-233
U-235, Th-231
B
C
A
U-238,
Th-234,
Pa-234M
U-233
Th-230
Curies per kilogram
Years

FIGURE 31

LWR SECOND PLUTONIUM RECYCLE — SPENT FUEL

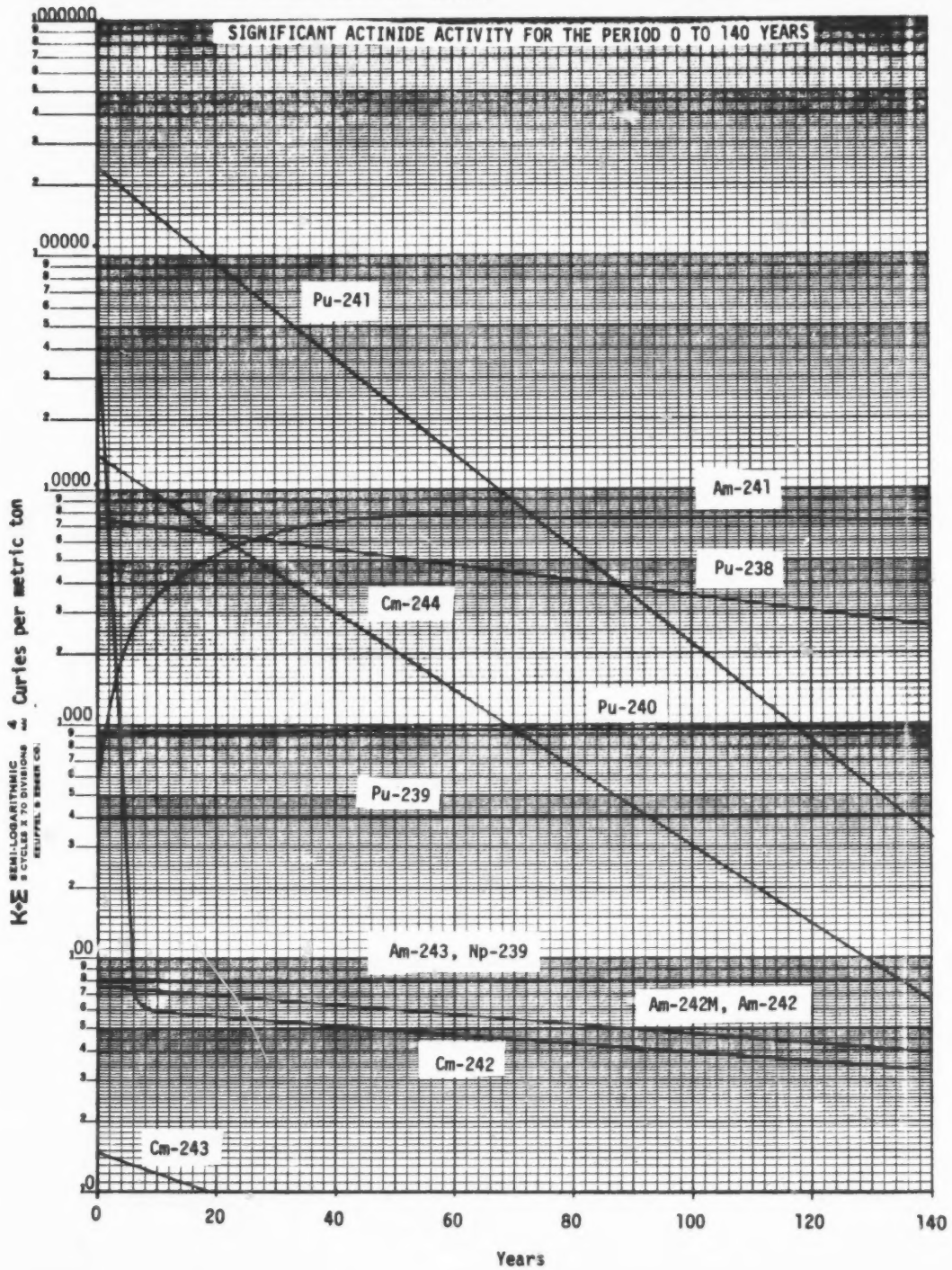


FIGURE 32

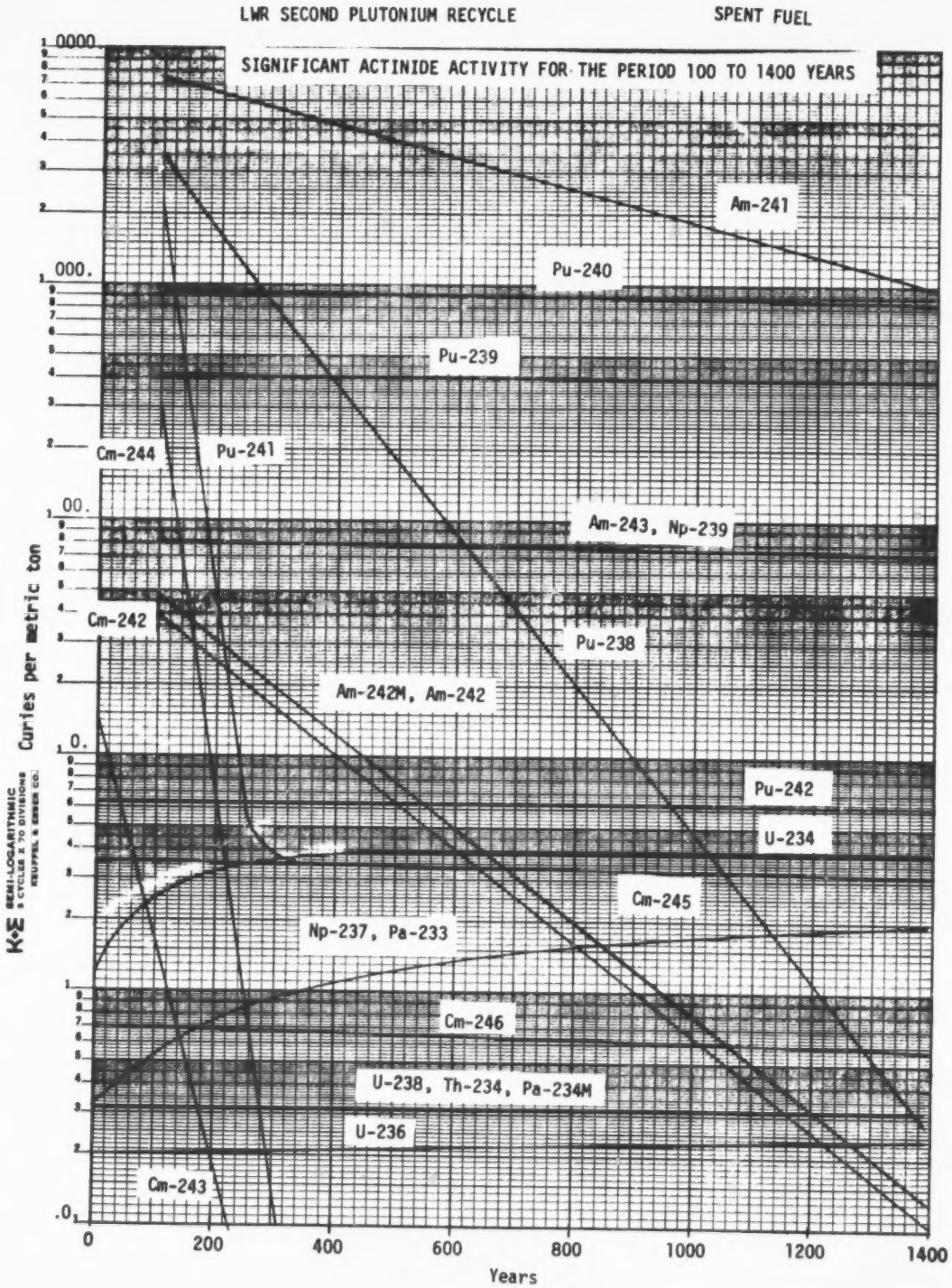

LWR SECOND PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS
Curies per metric ton
Years
Am-241
Pu-240
Pu-239
Pu-241
Cm-244
Am-243, Np-239
Pu-238
Cm-242
Am-242M, Am-242
Pu-242
U-234
Cm-245
Np-237, Pa-233
Cm-246
U-238, Th-234, Pa-234M
U-236
Cm-243
1.0000
1.000.
1.00.
1.0.
.01
0
200
400
600
800
1000
1200
1400

FIGURE 33

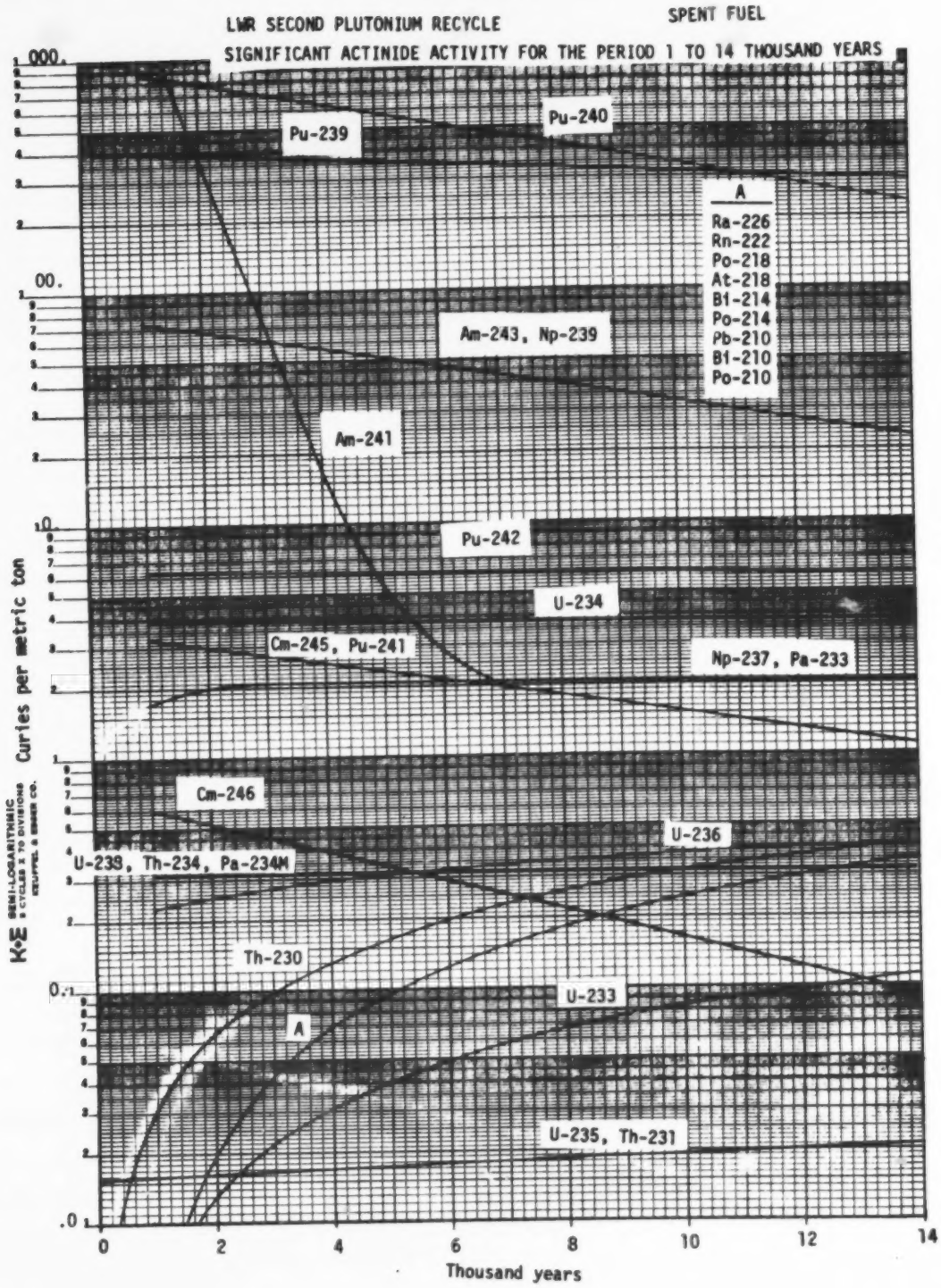

LWR SECOND PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Curies per metric ton
Thousand years
Pu-239
Pu-240
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
Am-243, Np-239
Am-241
Pu-242
U-234
Cm-245, Pu-241
Np-237, Pa-233
Cm-246
U-236
U-238, Th-234, Pa-234M
Th-230
U-233
A
U-235, Th-231
0
2
4
6
8
10
12
14

FIGURE 34

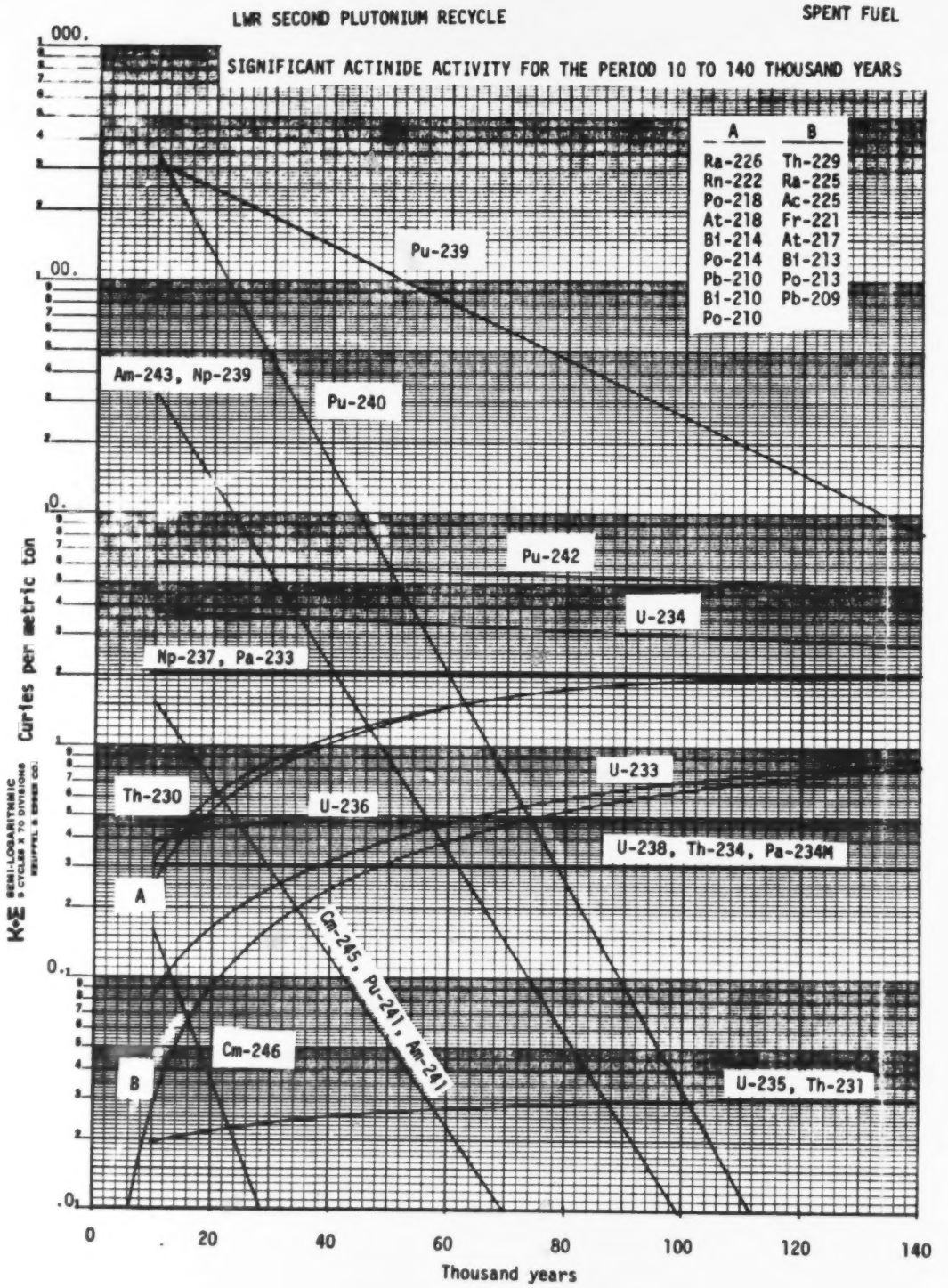

LWR SECOND PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
Pu-239
Am-243, Np-239
Pu-240
Pu-242
U-234
Np-237, Pa-233
U-233
Th-230
U-236
U-238, Th-234, Pa-234M
A
Cm-245, Pu-241, Am-241
Cm-246
B
U-235, Th-231
000.
00.
0.
0.1
.01
Curies per metric ton
0
20
40
60
80
100
120
140
Thousand years

FIGURE 35

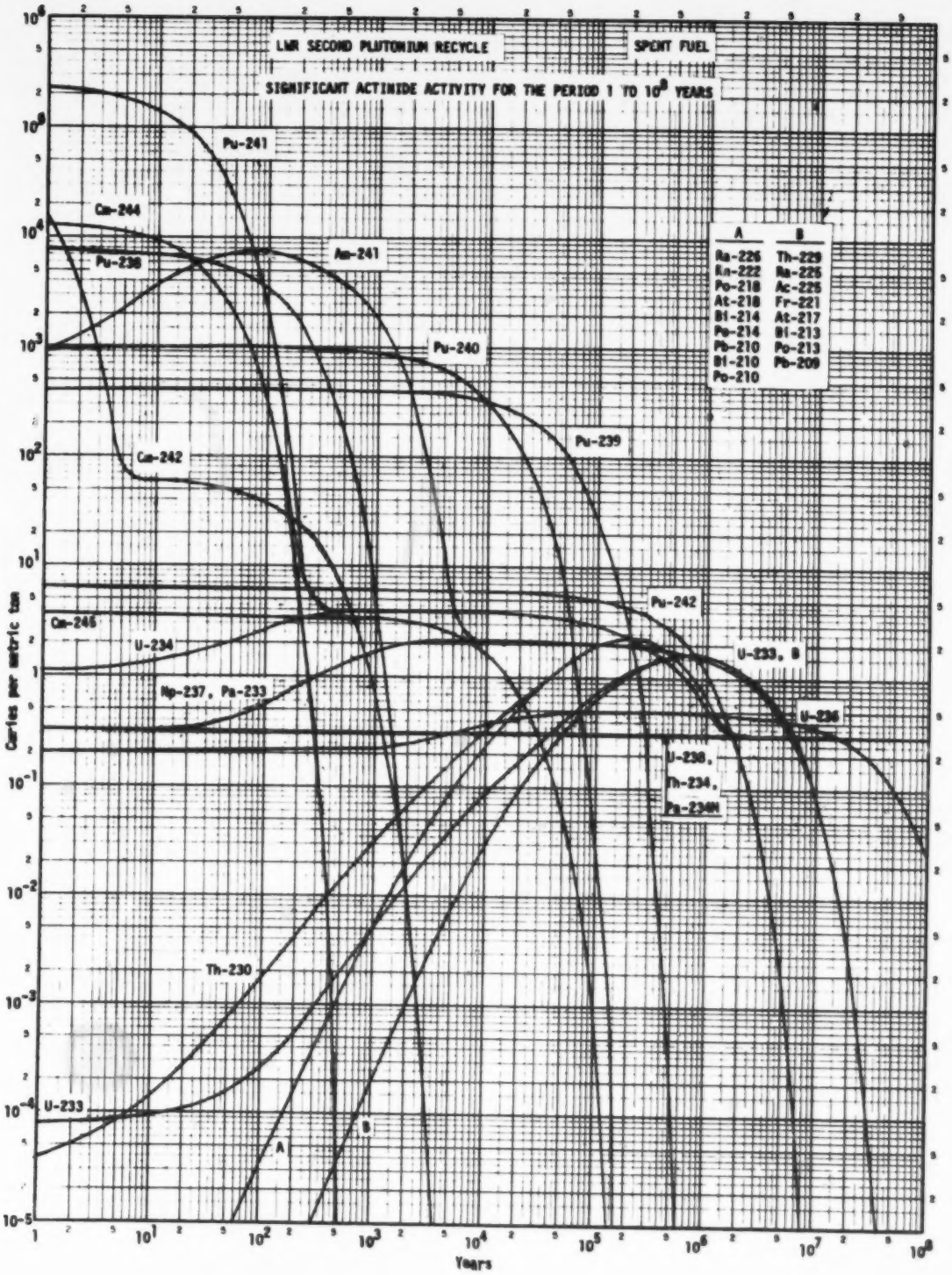

LWR SECOND PLUTONIUM RECYCLE
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
Pu-241
Cm-244
Pu-238
Am-241
Pu-240
Pu-239
Cm-242
Pu-242
Cm-245
U-234
U-233, B
Np-237, Pa-233
U-236
U-238, Th-234, Pa-234M
Th-230
U-233
A
B
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
Curies per metric ton
Years

FIGURE 36

LWR SECOND PLUTONIUM RECYCLE REPROCESSING PLANT WASTE

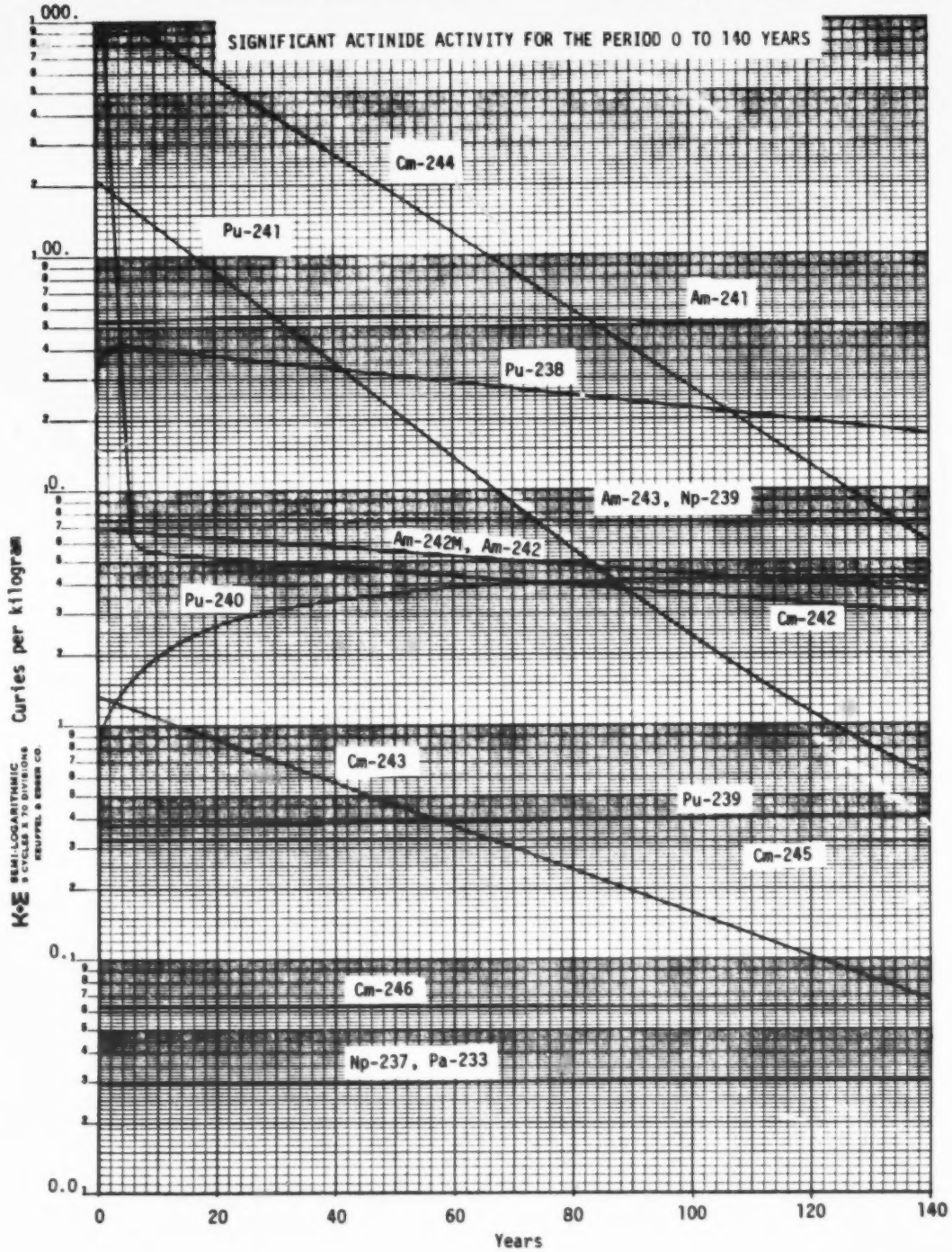


FIGURE 37

LWR SECOND PLUTONIUM RECYCLE REPROCESSING PLANT WASTE

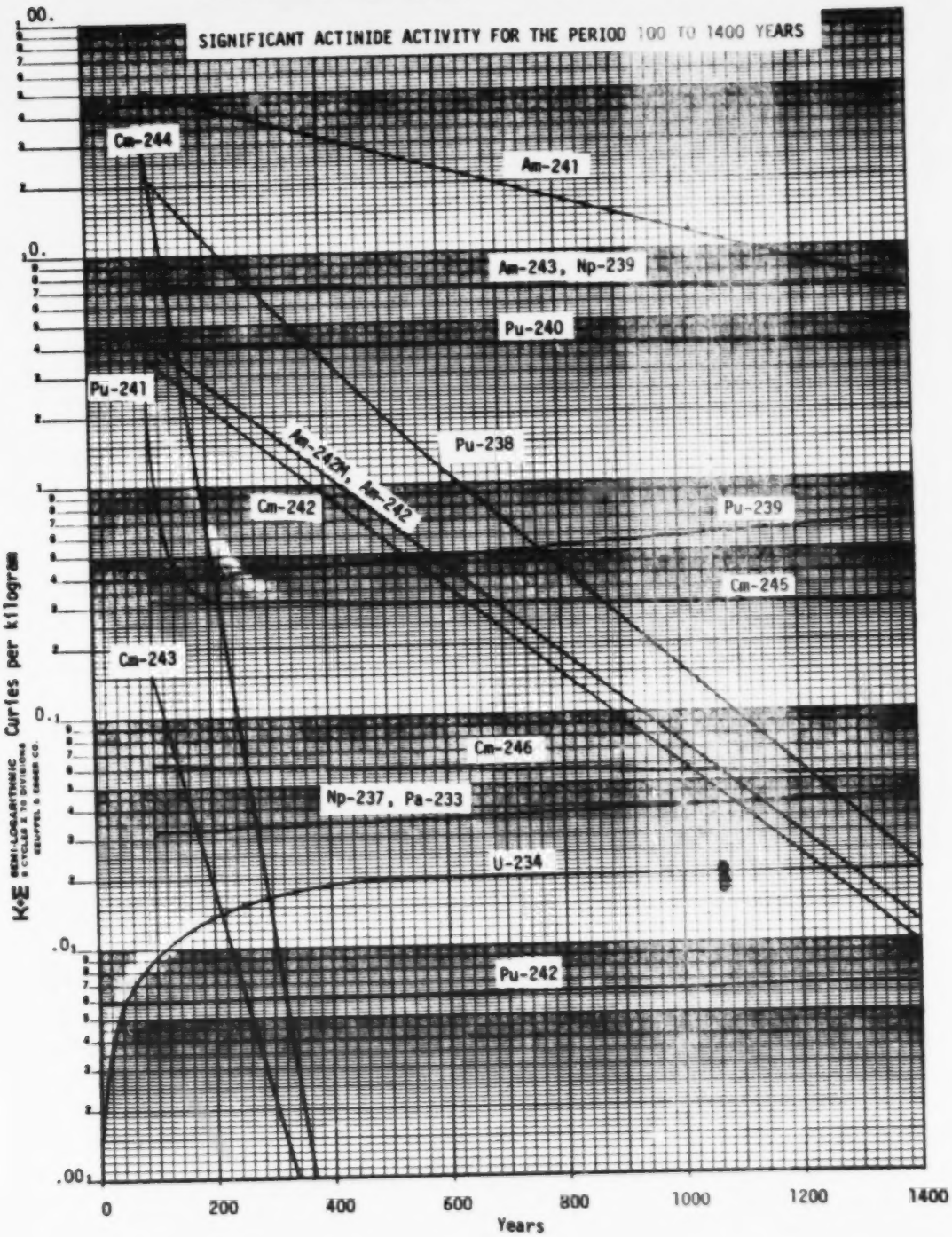


FIGURE 38

LMR SECOND PLUTONIUM RECYCLE

REPROCESSING PLANT WASTE

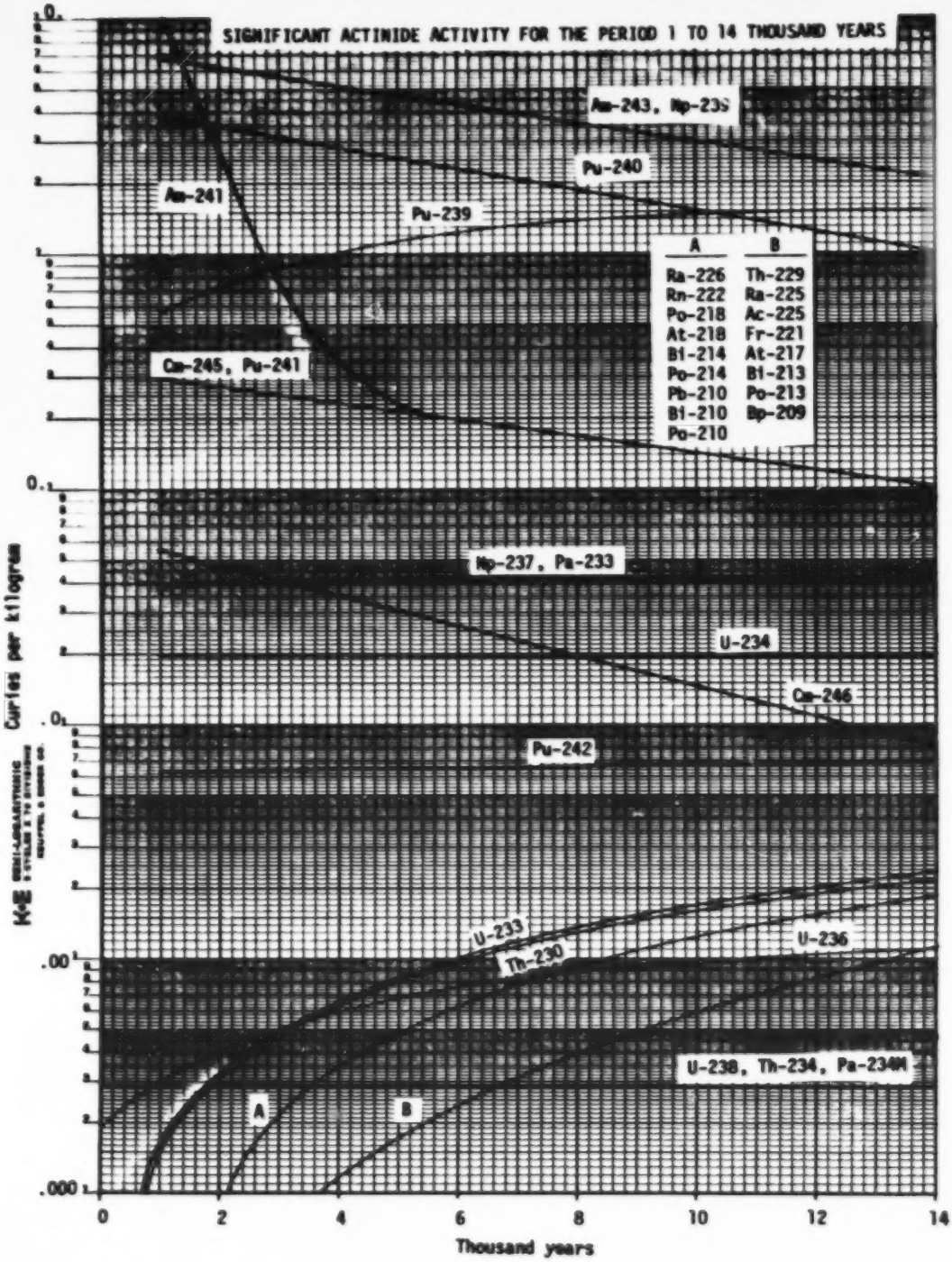


FIGURE 39

LWR SECOND PLUTONIUM RECYCLE — REPROCESSING PLANT WASTE

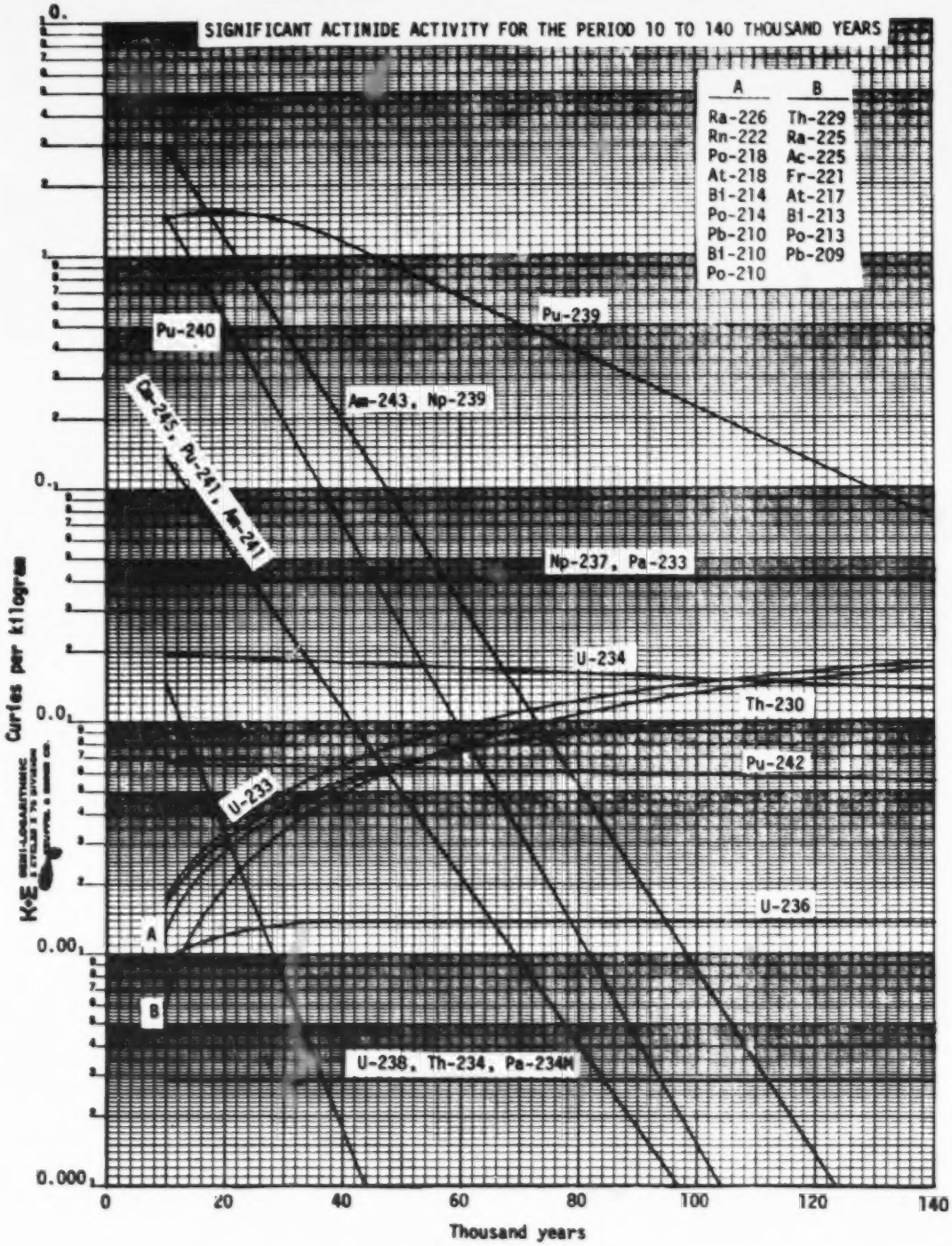


FIGURE 40

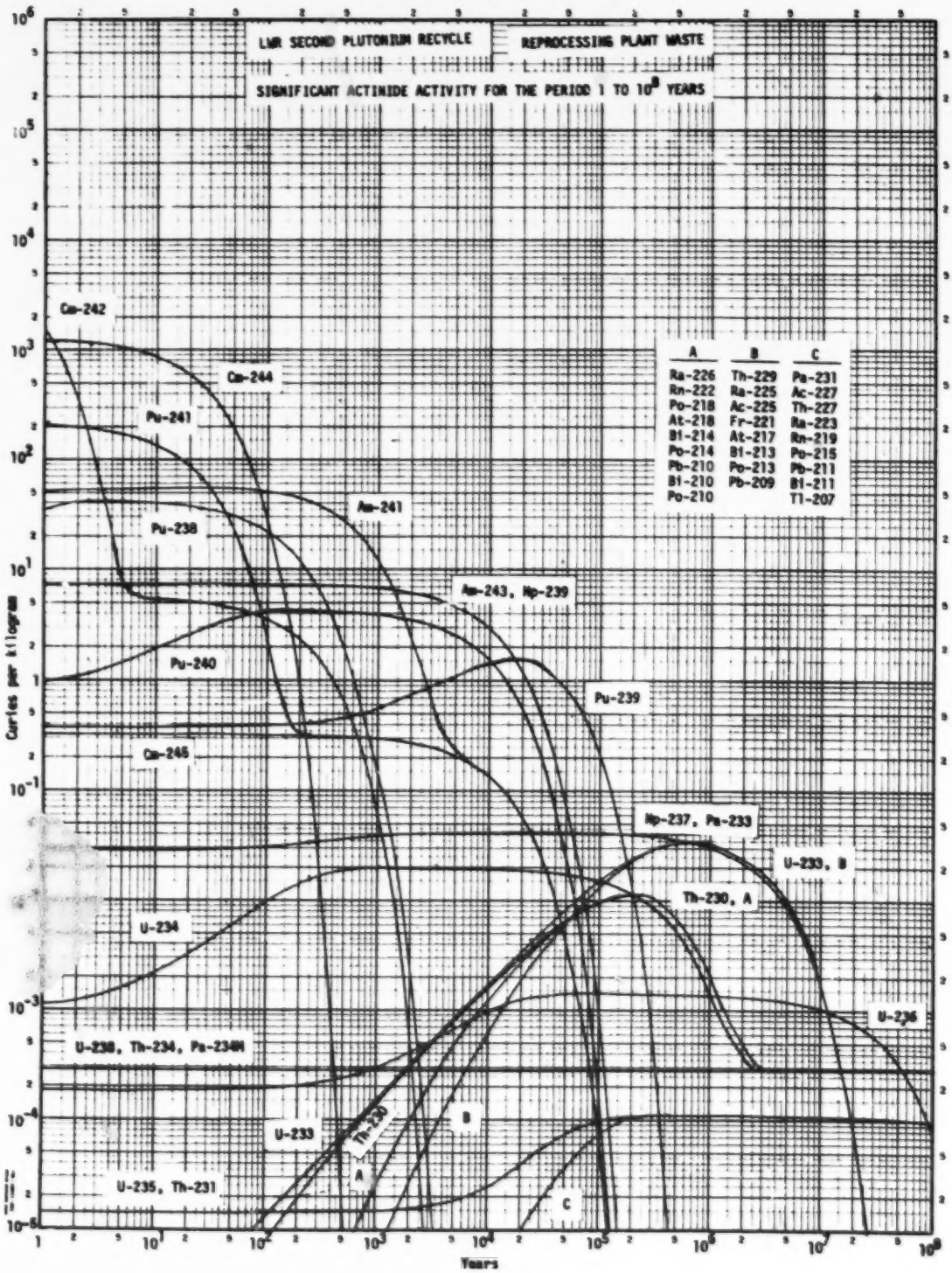

LMR SECOND PLUTONIUM RECYCLE
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
Curies per kilogram
Years
Cm-242
Cm-244
Pu-241
Am-241
Pu-238
Am-243, Np-239
Pu-240
Pu-239
Cm-246
Np-237, Pa-233
U-230, B
Th-230, A
U-234
U-236
U-238, Th-234, Pa-234M
U-233
Th-230
A
B
C
U-235, Th-231
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207

FIGURE 41

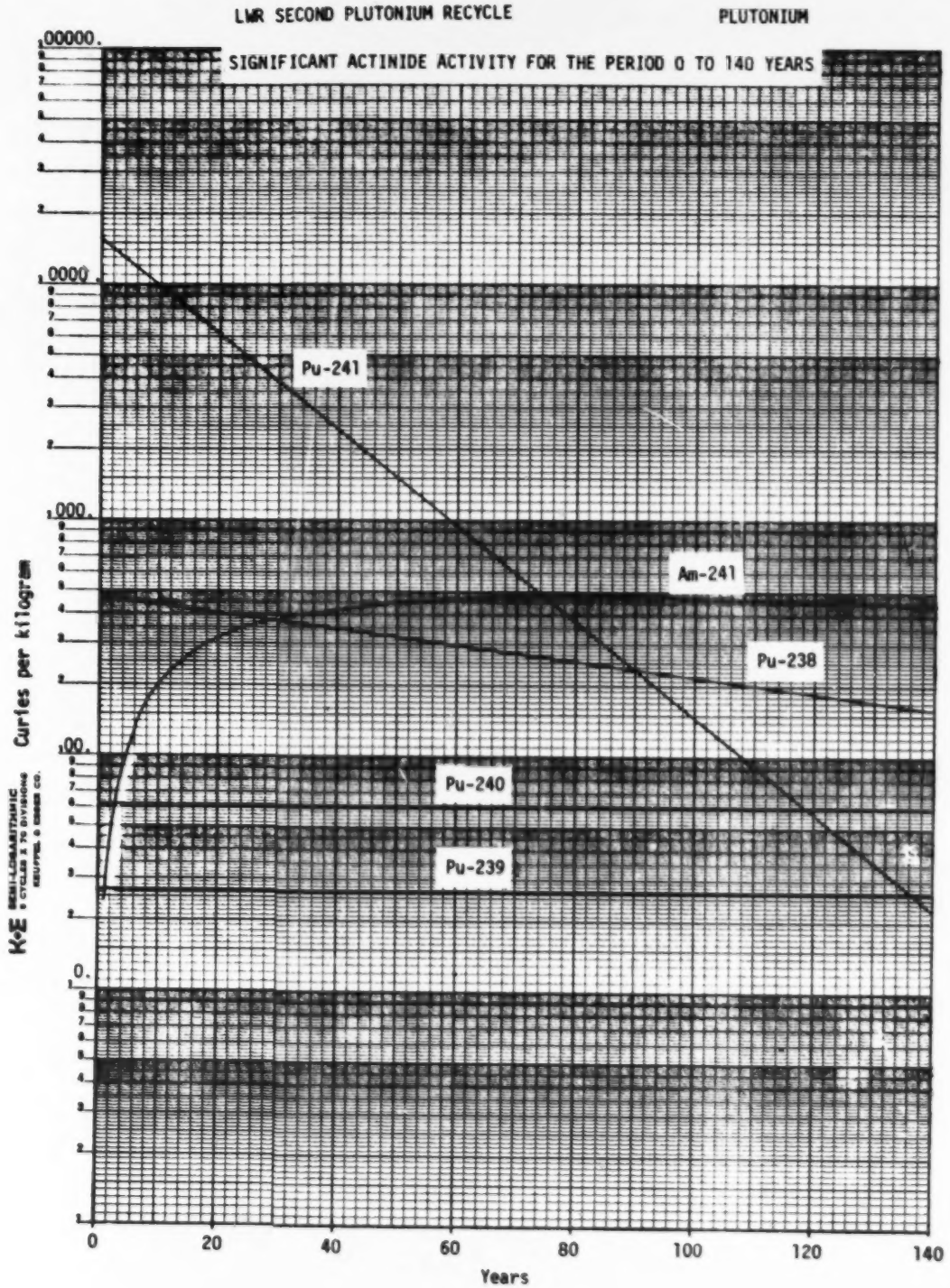

LWR SECOND PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Curies per kilogram
Pu-241
Am-241
Pu-238
Pu-240
Pu-239
Years
0
20
40
60
80
100
120
140

FIGURE 42

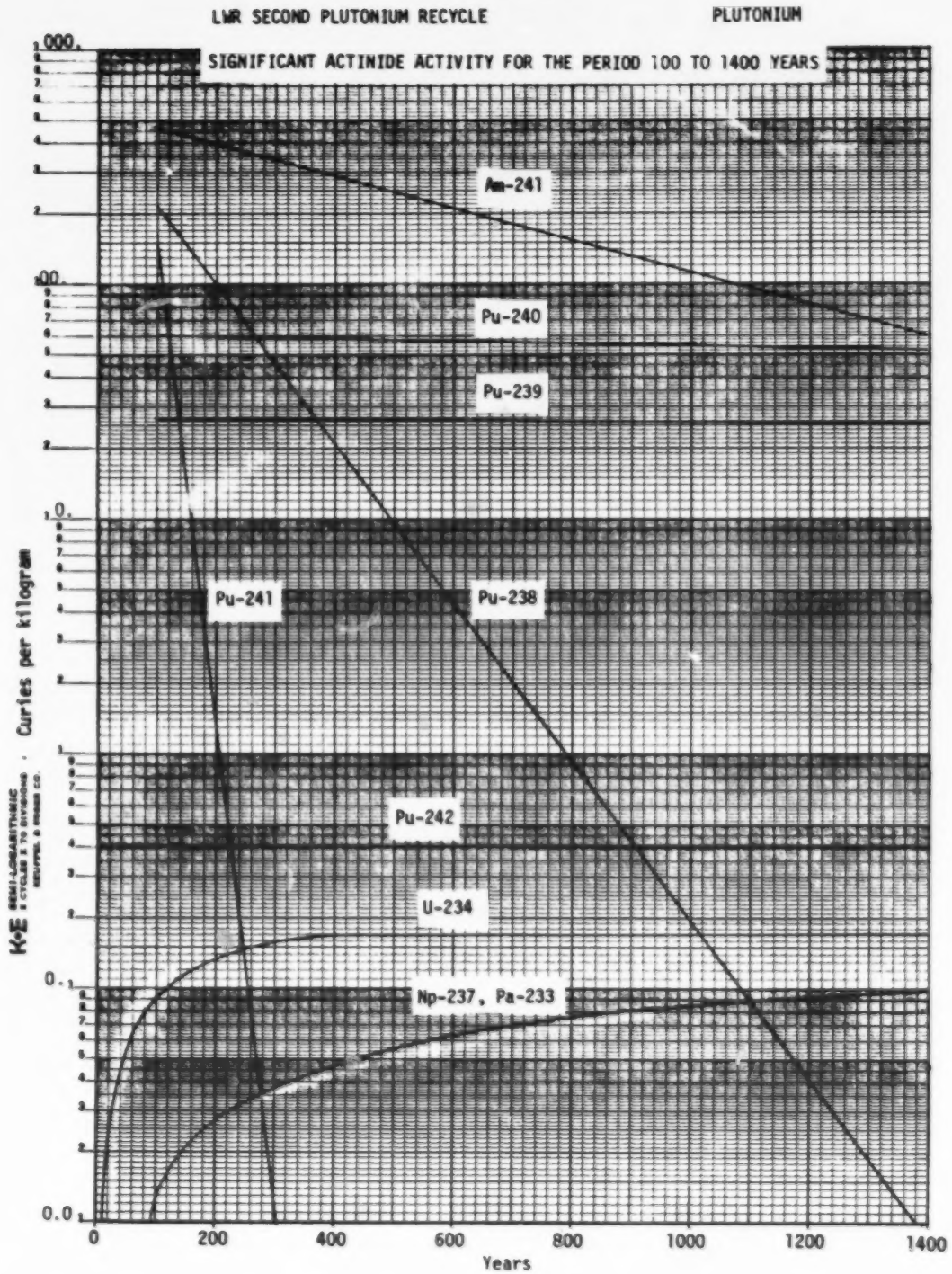

LWR SECOND PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS
Curies per kilogram
Years
Am-241
Pu-240
Pu-239
Pu-241
Pu-238
Pu-242
U-234
Np-237, Pa-233
1,000.
100.
10.
1.
0.1
0.0
0
200
400
600
800
1000
1200
1400

FIGURE 43

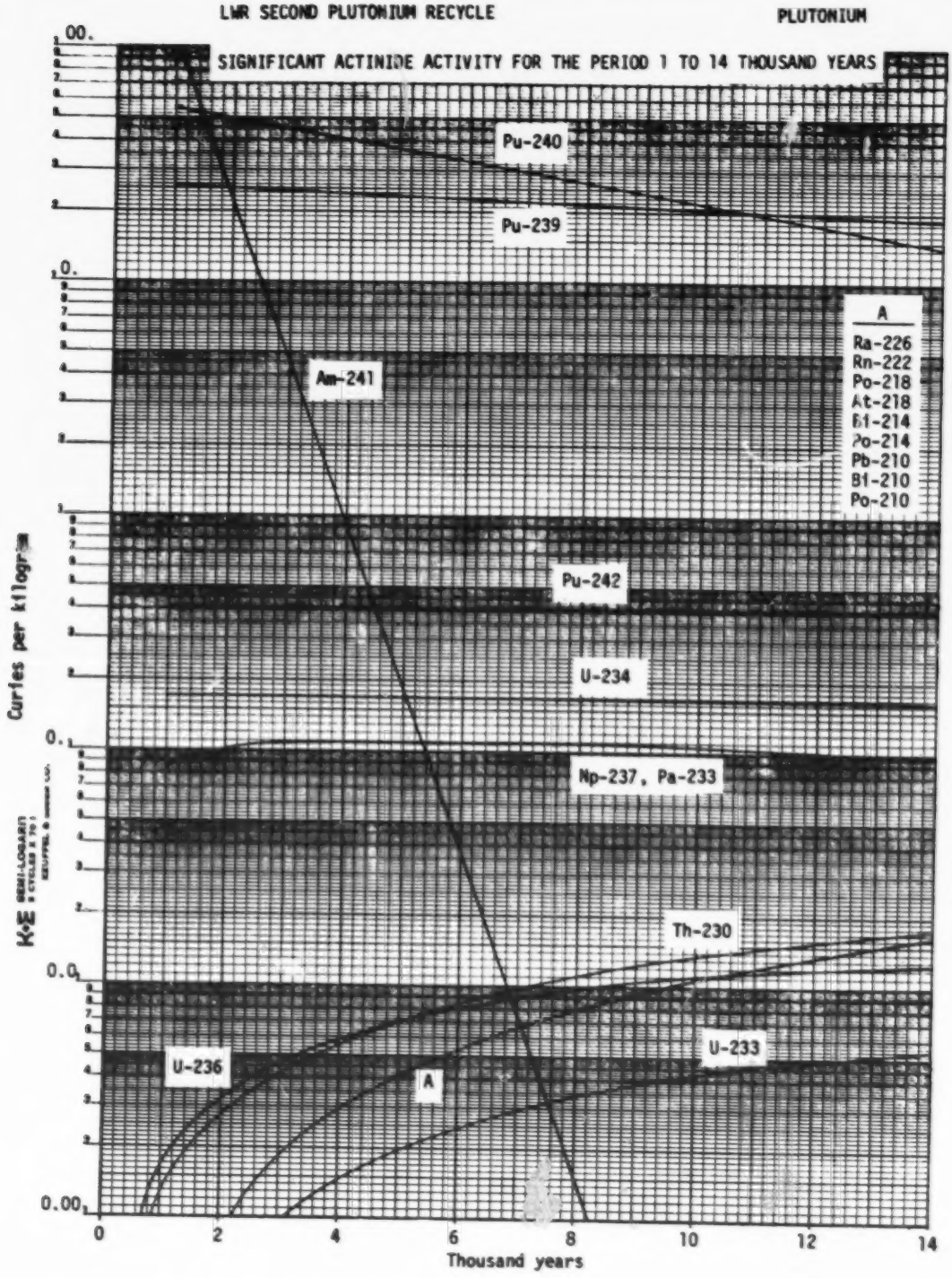

LWR SECOND PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Curies per kilogram
Thousand years
Pu-240
Pu-239
Am-241
Pu-242
U-234
Np-237, Pa-233
Th-230
U-233
U-236
A
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
00.
0.
0.1
0.0
0.00
0
2
4
6
8
10
12
14

FIGURE 44

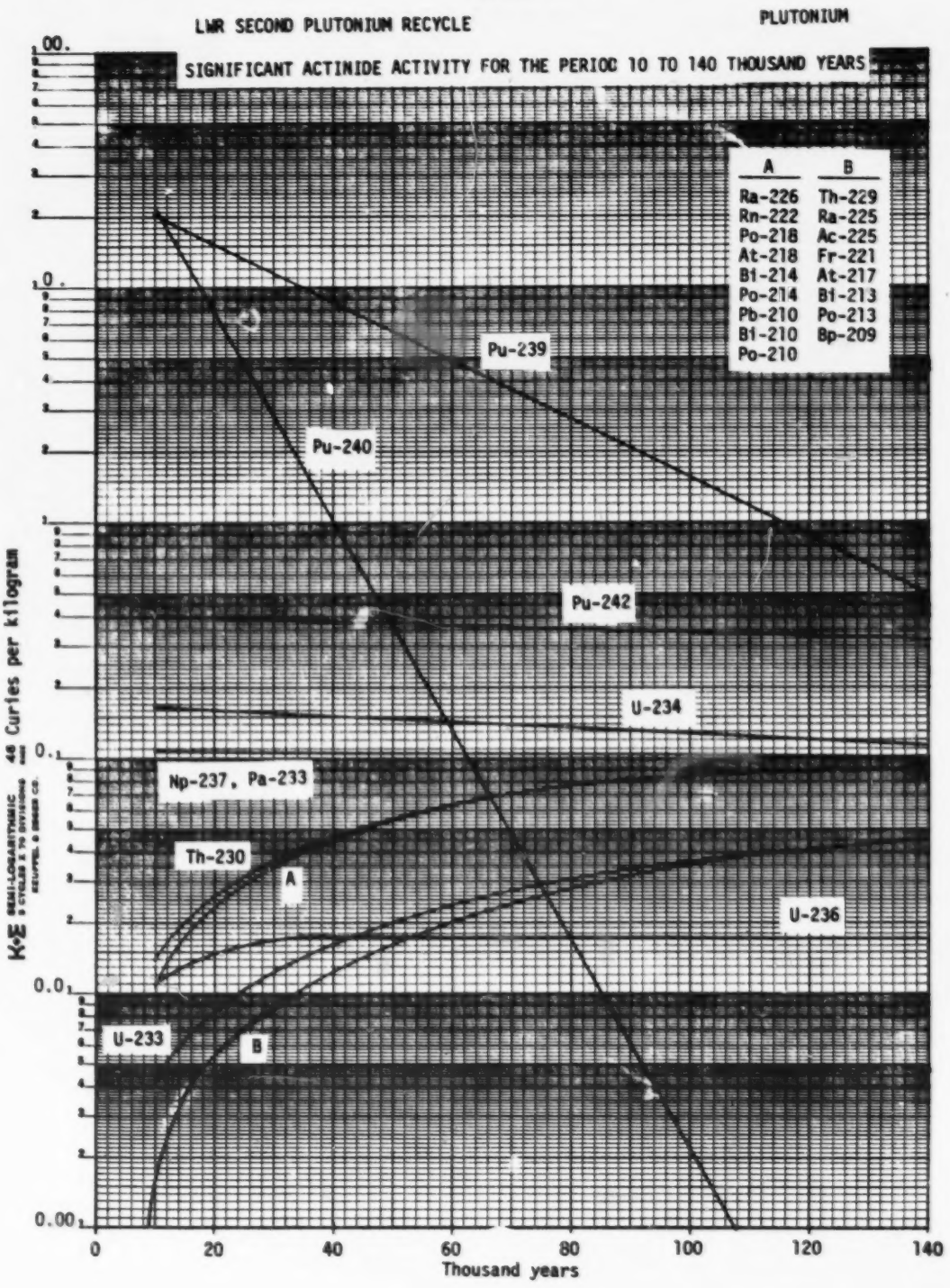

LWR SECOND PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
Pu-239
Pu-240
Pu-242
U-234
Np-237, Pa-233
Th-230
A
U-236
U-233
B
Curies per kilogram
0
20
40
60
80
100
120
140
Thousand years

FIGURE 45

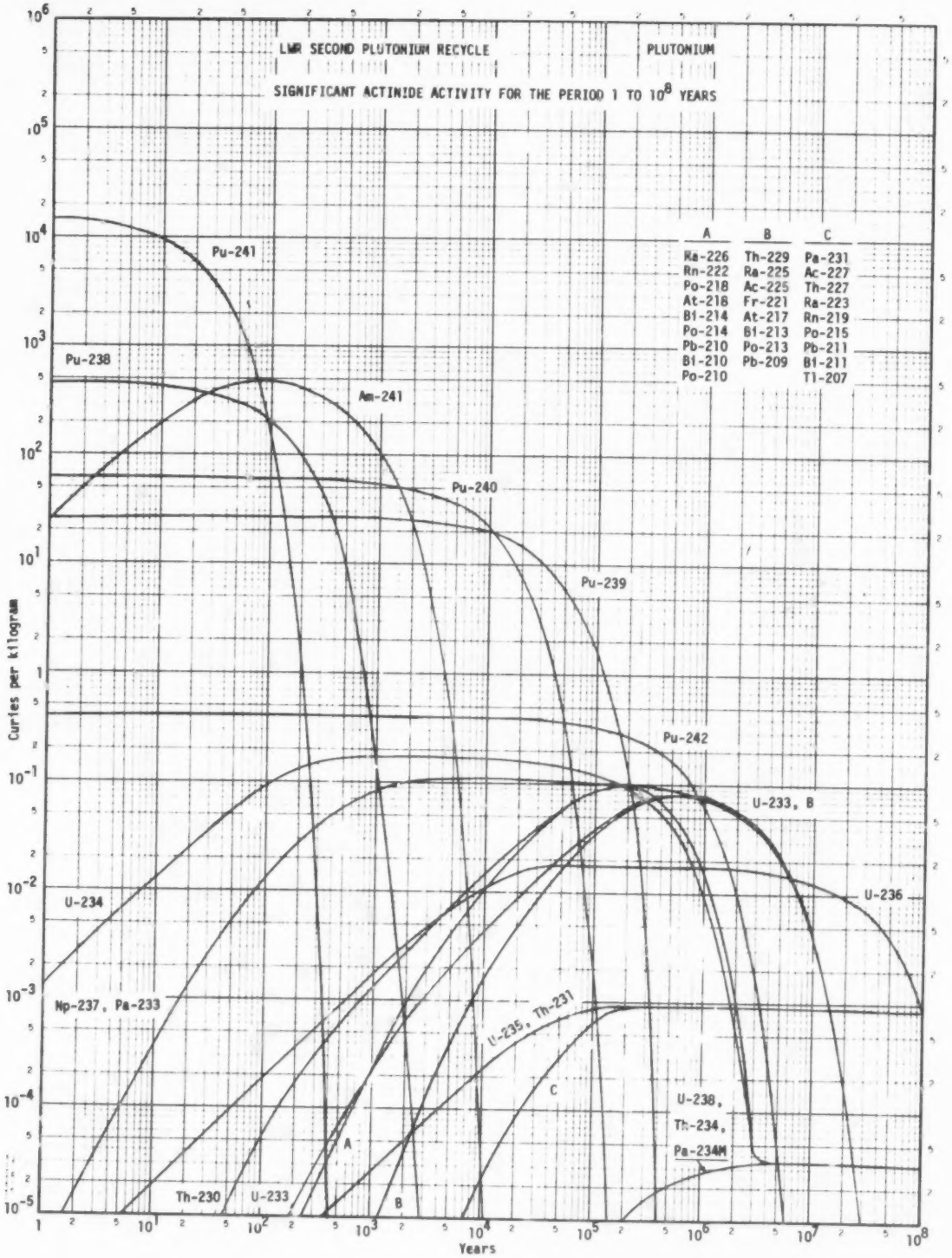

LWR SECOND PLUTONIUM RECYCLE
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-241
Pu-238
Am-241
Pu-240
Pu-239
Pu-242
U-233, B
U-236
U-234
Np-237, Pa-233
U-235, Th-231
C
U-238,
Th-234,
Pa-234M
A
B
Th-230
U-233
Curies per kilogram
Years

FIGURE 46

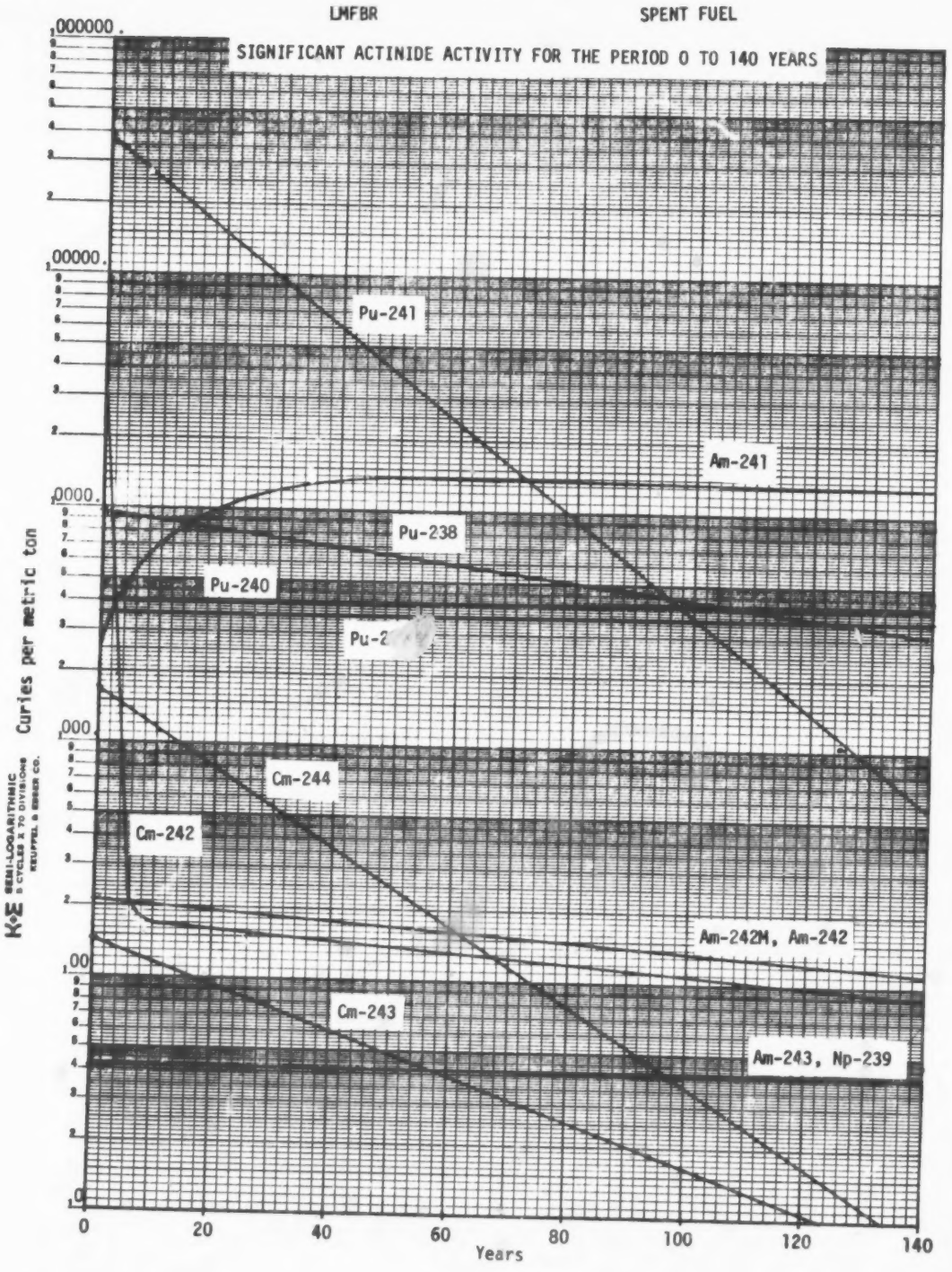

LMFBR
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Curies per metric ton
Pu-241
Am-241
Pu-238
Pu-240
Pu-2
Cm-244
Cm-242
Am-242M, Am-242
Cm-243
Am-243, Np-239
0
20
40
60
80
100
120
140
Years
K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS KEUFFEL & ESSER CO.

FIGURE 47

LMFBR

SPENT FUEL

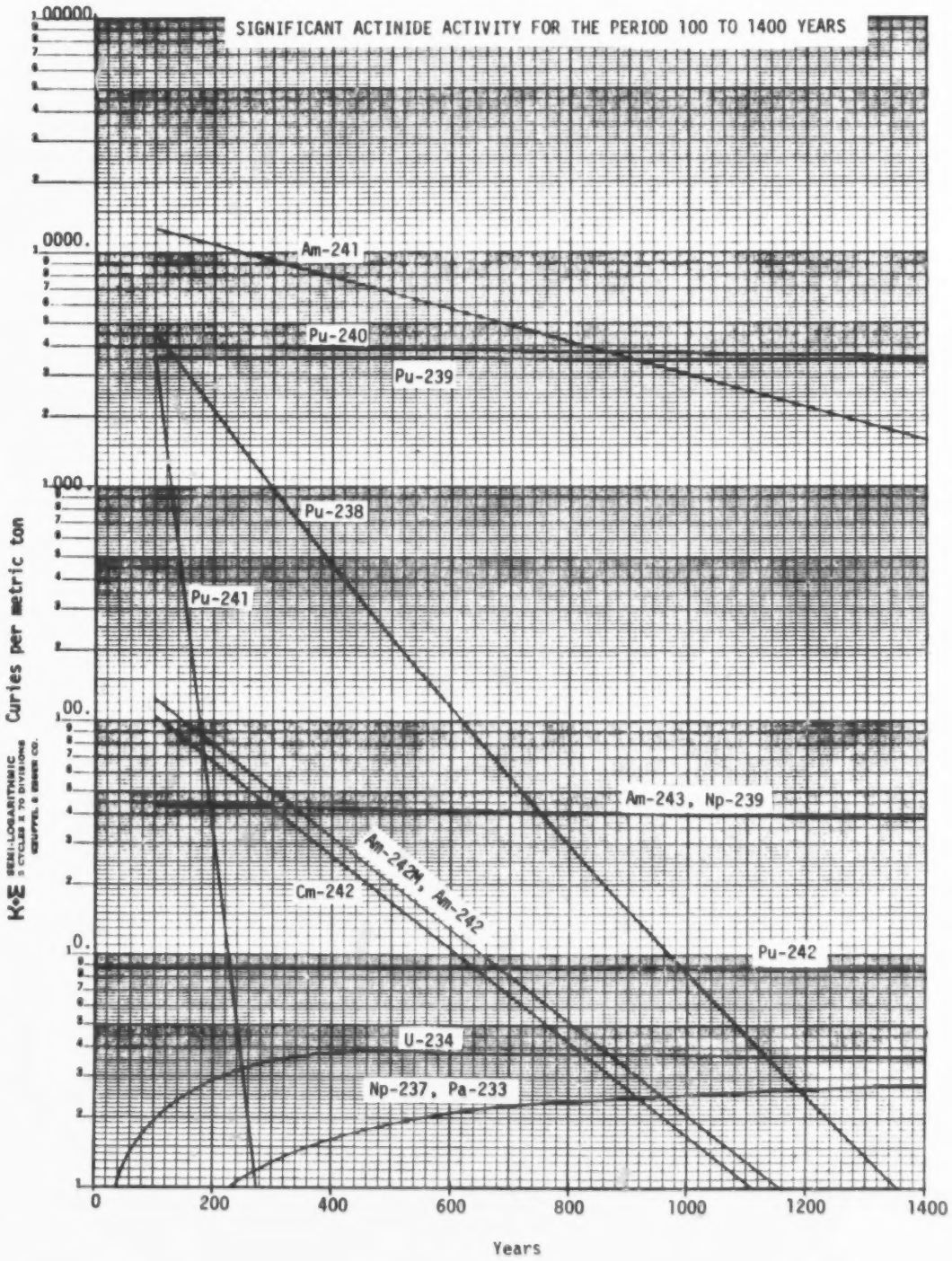


FIGURE 48

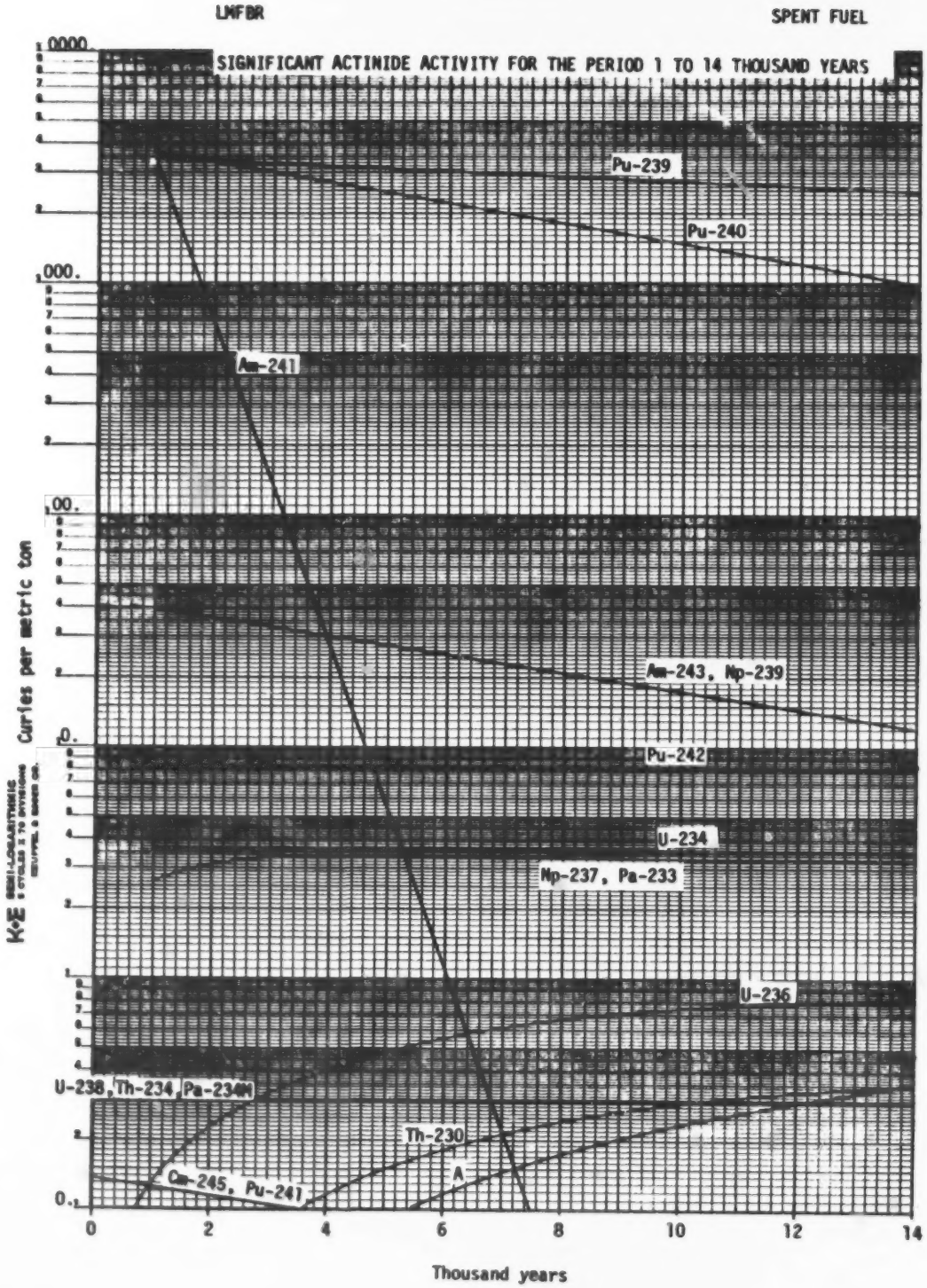
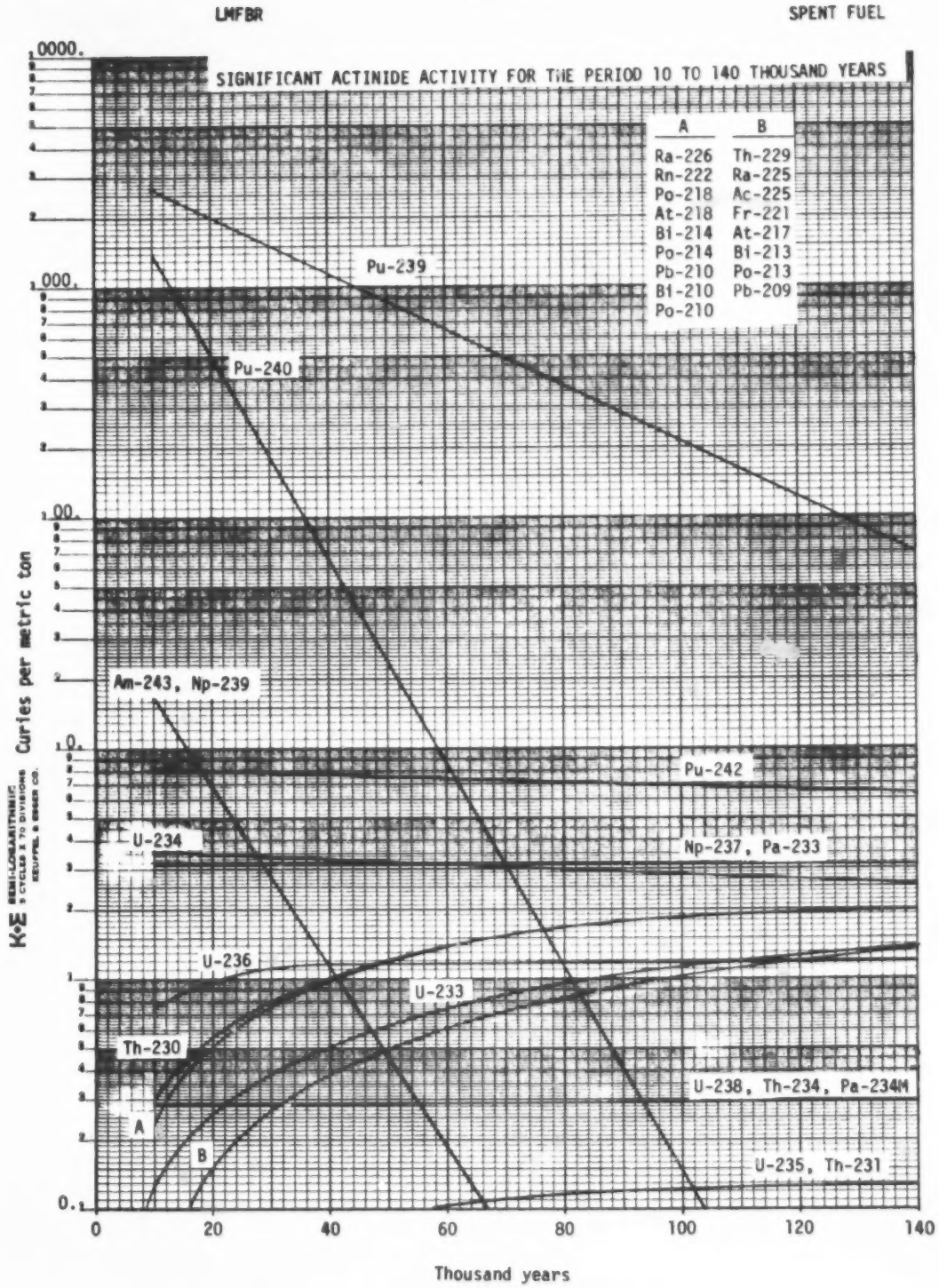

LMFBR
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Curies per metric ton
Pu-239
Pu-240
Am-241
Am-243, Np-239
Pu-242
U-234
Np-237, Pa-233
U-236
U-238, Th-234, Pa-234M
Th-230
Cm-245, Pu-241
A
0
2
4
6
8
10
12
14
Thousand years

FIGURE 49


LMFBR
SPENT FUEL
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
Pu-239
Pu-240
Am-243, Np-239
Pu-242
U-234
Np-237, Pa-233
U-236
U-233
Th-230
U-238, Th-234, Pa-234M
A
B
U-235, Th-231
Curies per metric ton
Thousand years
0
20
40
60
80
100
120
140

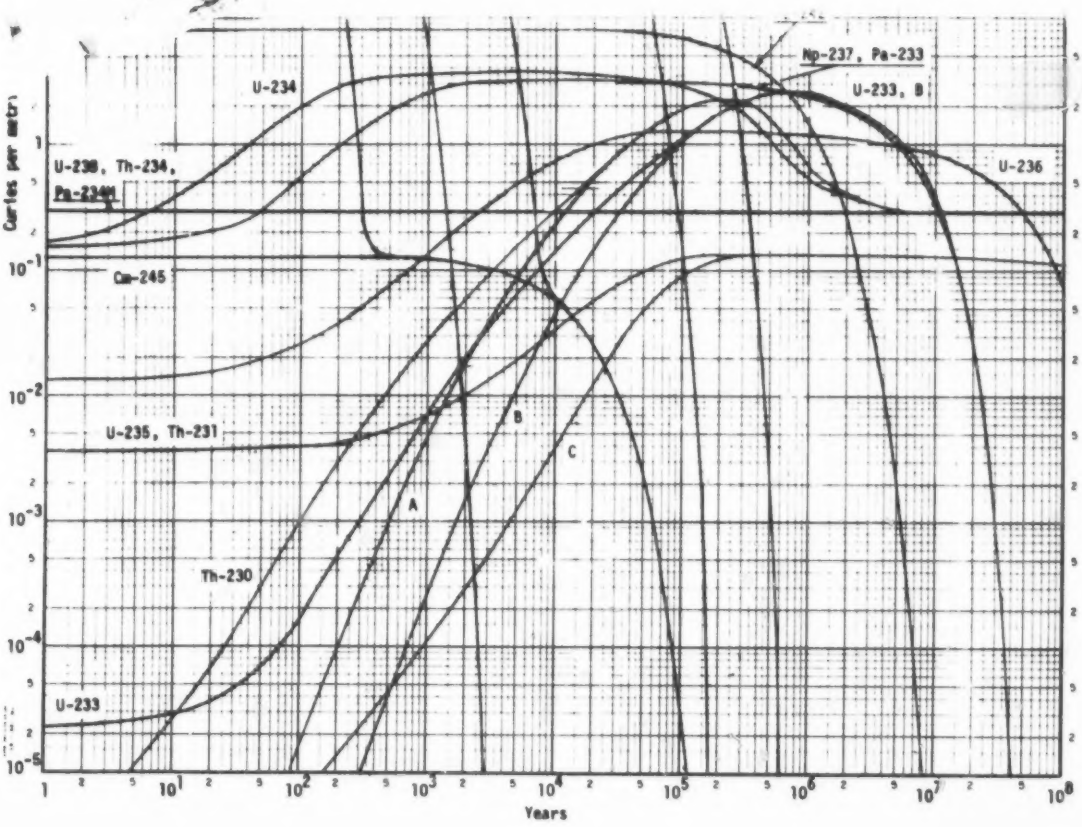

Np-237, Pa-233
U-234
U-233, B
U-238, Th-234,
Pa-234m
U-236
Cm-245
U-235, Th-231
B
C
A
Th-230
U-233
Curies per metric
Years

FIGURE 51

REPROCESSING PLANT WASTE

LMFBR

SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS

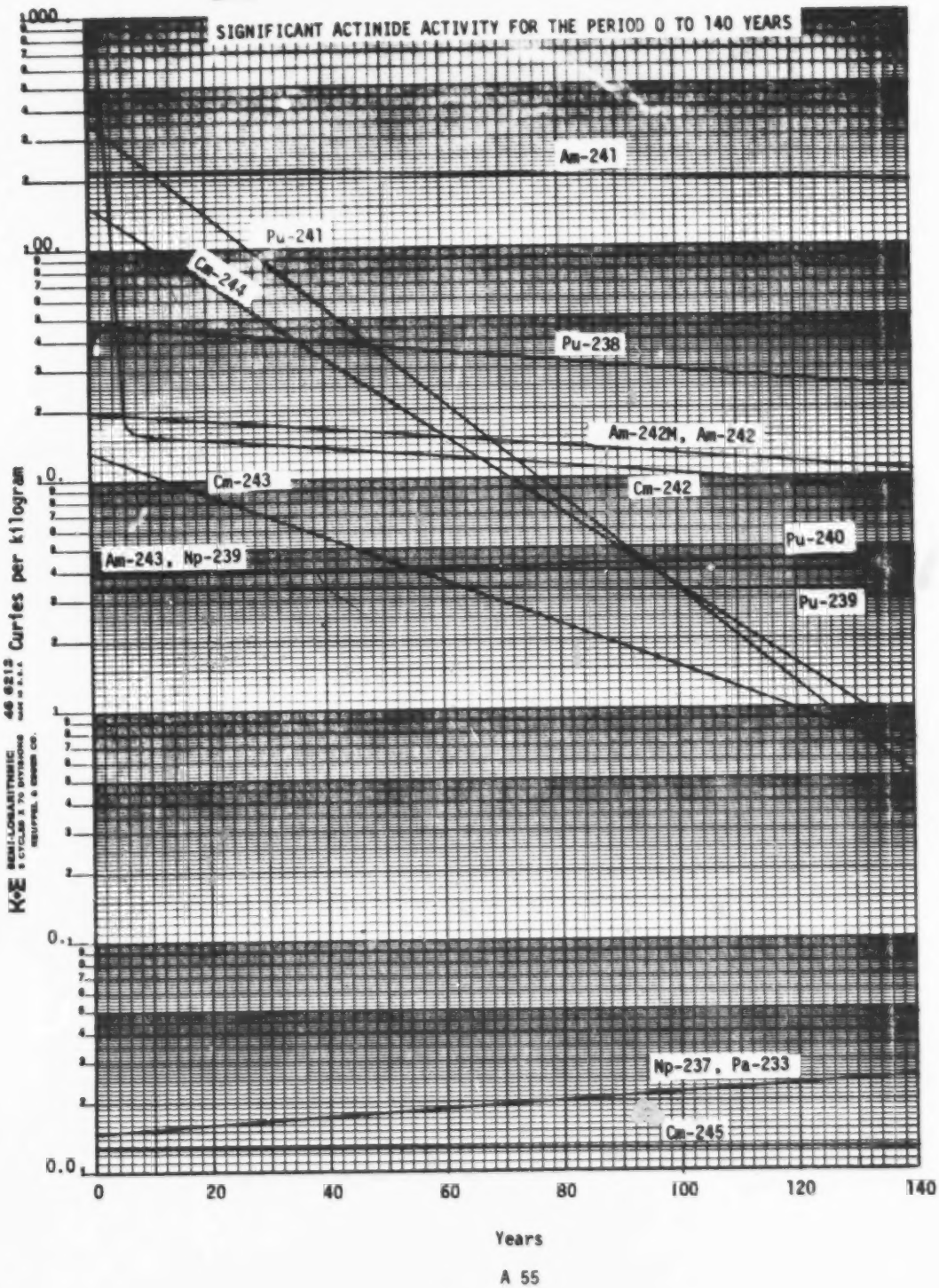


FIGURE 52

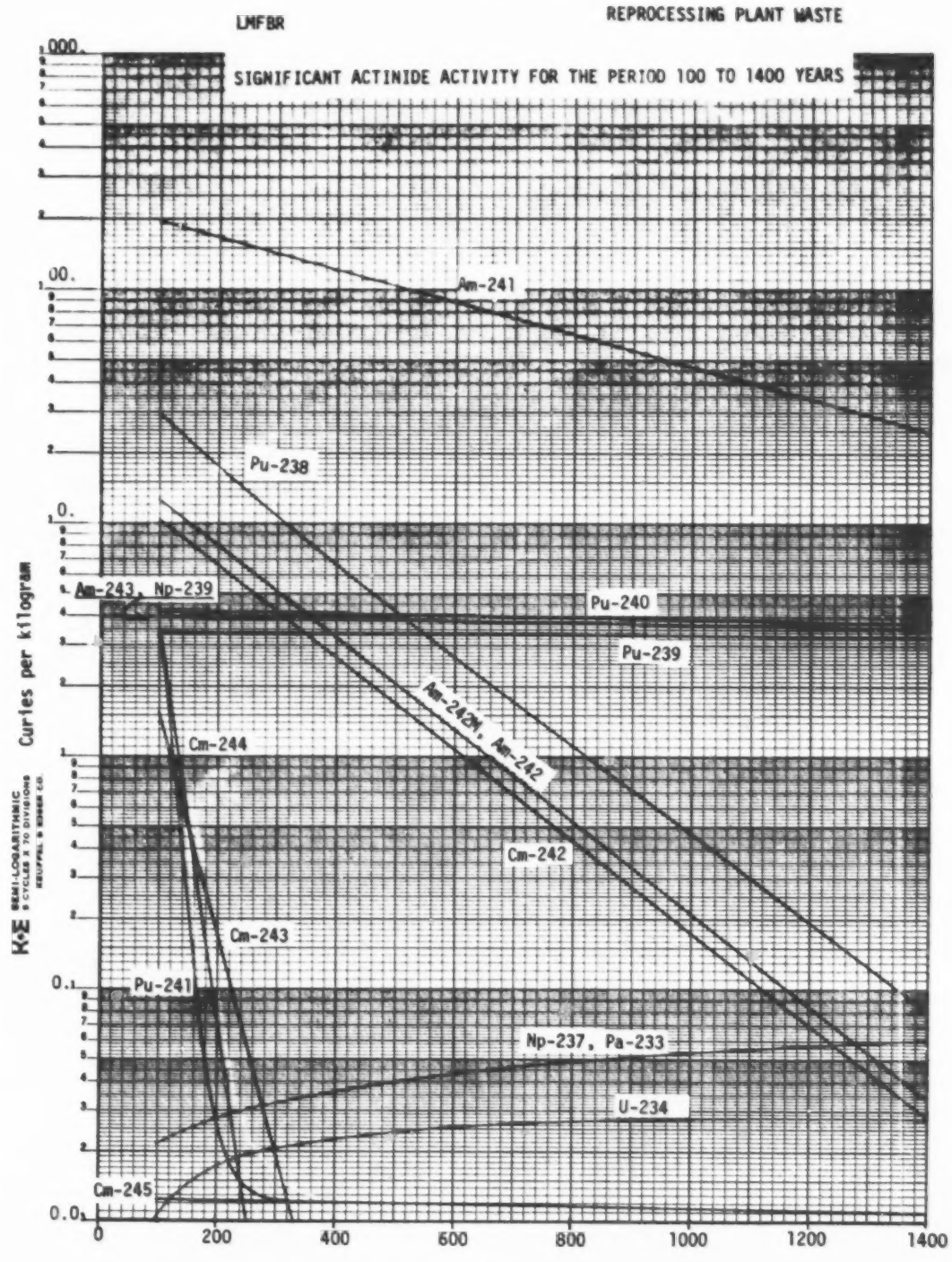

LMFBR
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS
Curies per kilogram
1000.
100.
10.
1.
0.1
0.01
Am-241
Pu-238
Am-243, Np-239
Pu-240
Pu-239
Am-242M, Am-242
Cm-244
Cm-242
Cm-243
Pu-241
Np-237, Pa-233
U-234
Cm-245
0
200
400
600
800
1000
1200
1400
Years
K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS KEUFFEL & ESSER CO.

FIGURE 53

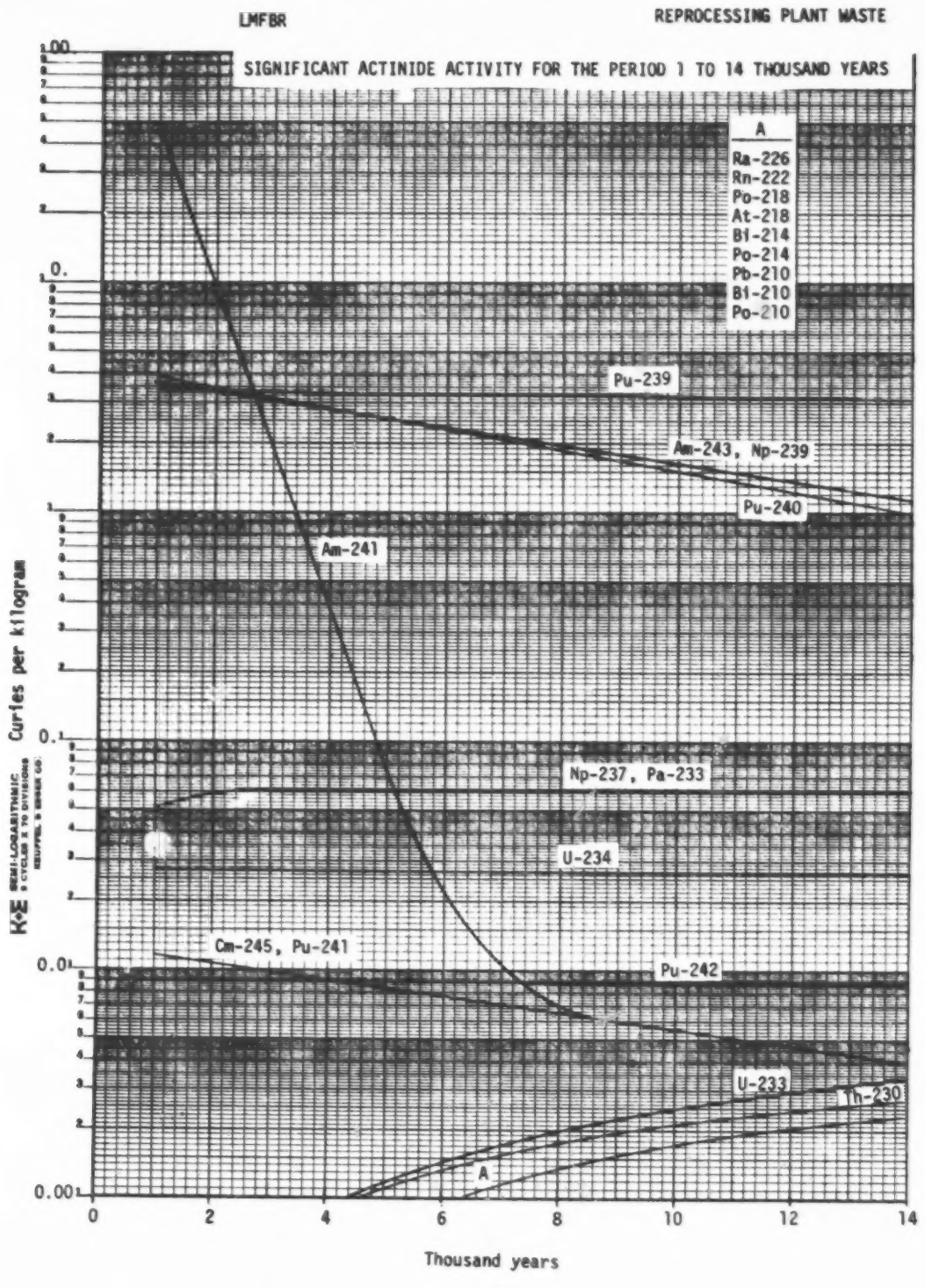

LMFBR
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
Pu-239
Am-243, Np-239
Pu-240
Am-241
Np-237, Pa-233
U-234
Cm-245, Pu-241
Pu-242
U-233
Th-230
A
Curies per kilogram
100
0.
0.1
0.01
0.001
0
2
4
6
8
10
12
14
Thousand years

FIGURE 54

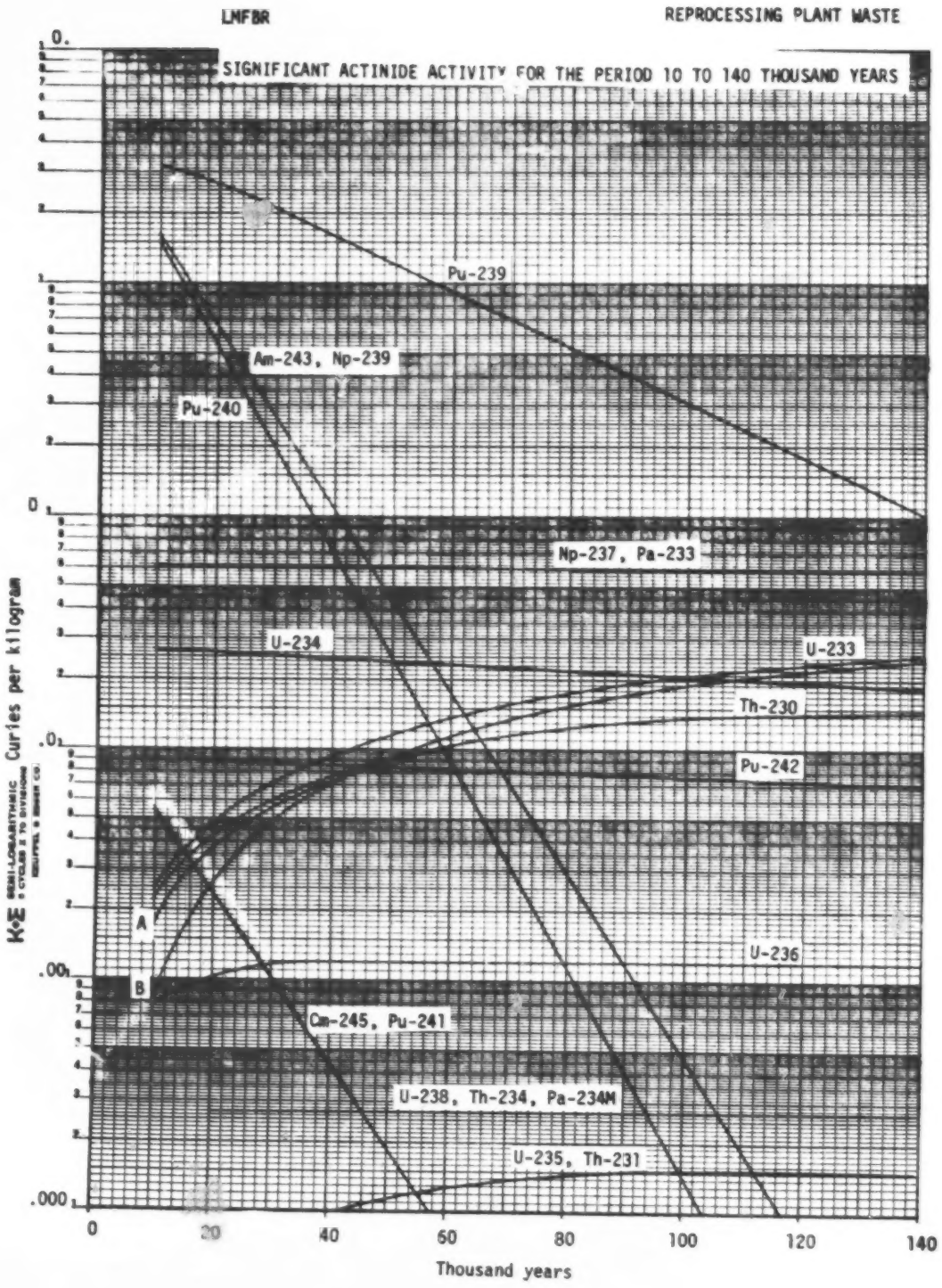

LMFBR
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
Pu-239
Am-243, Np-239
Pu-240
Np-237, Pa-233
U-234
U-233
Th-230
Pu-242
A
B
U-236
Cm-245, Pu-241
U-238, Th-234, Pa-234M
U-235, Th-231
0.
0
.0
.00
.000
Curies per kilogram
0
20
40
60
80
100
120
140
Thousand years

FIGURE 55

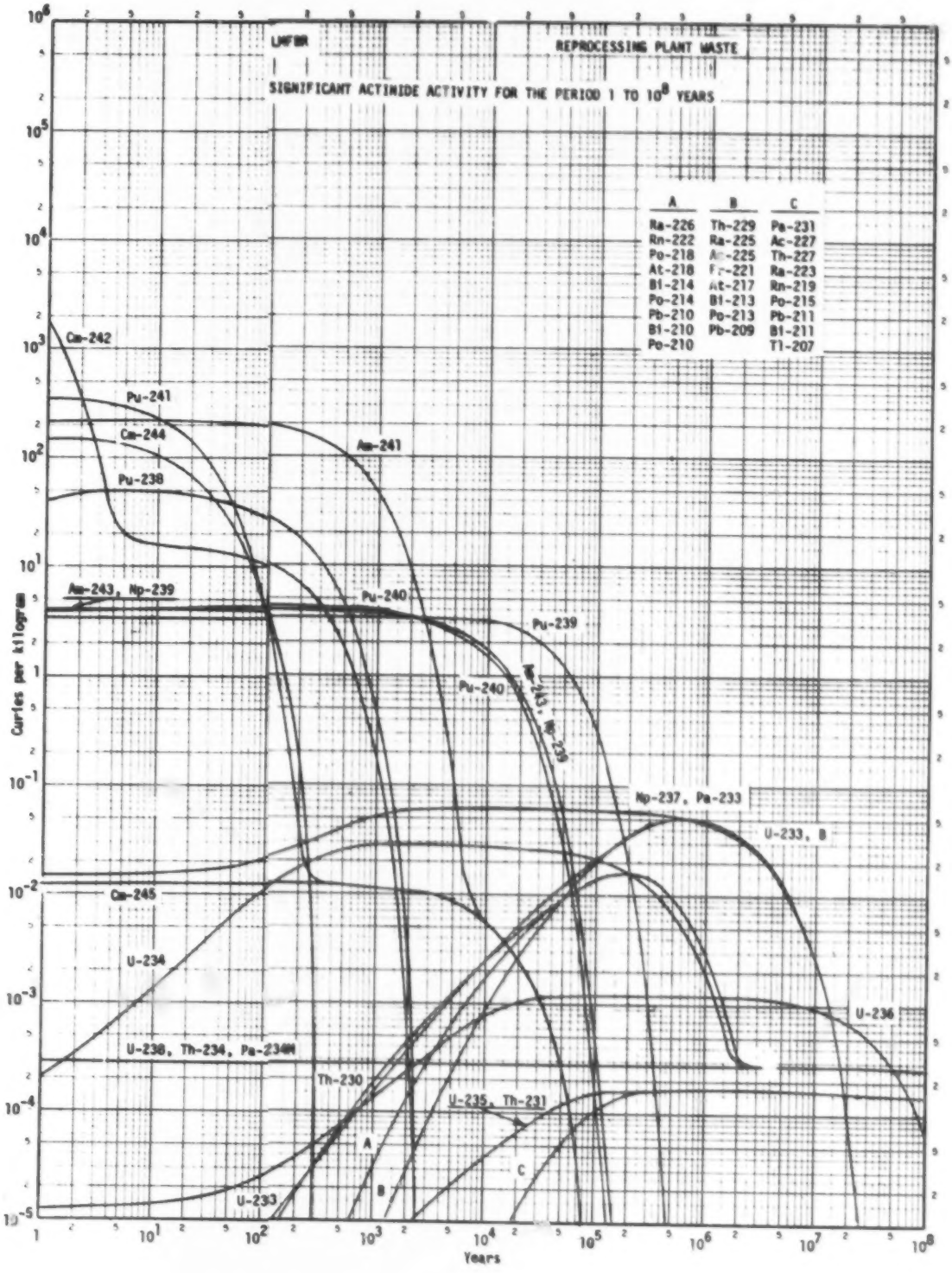

LMFBR
REPROCESSING PLANT WASTE
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Pb-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Cm-242
Pu-241
Cm-244
Pu-238
Am-241
Am-243, Np-239
Pu-240
Pu-239
Np-237, Pa-233
U-233, B
Cm-245
U-234
U-236
U-238, Th-234, Pa-234M
Th-230
U-235, Th-231
U-233
A
B
C
Curies per kilogram
Years

FIGURE 56

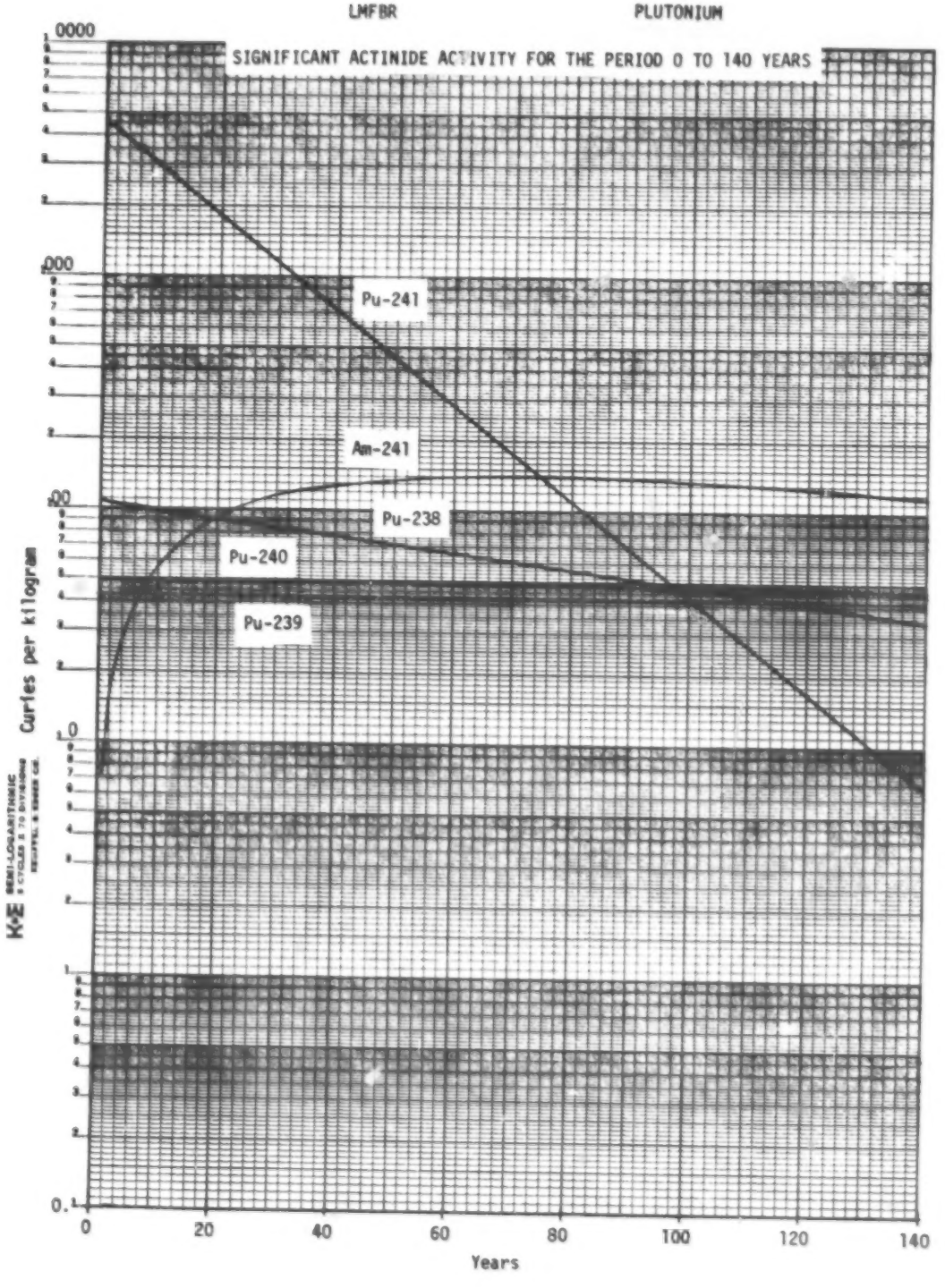

LMFBR
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 0 TO 140 YEARS
Pu-241
Am-241
Pu-238
Pu-240
Pu-239
Curies per kilogram
Years
0
20
40
60
80
100
120
140
0.1
K-E SEMI-LOGARITHMIC

FIGURE 57

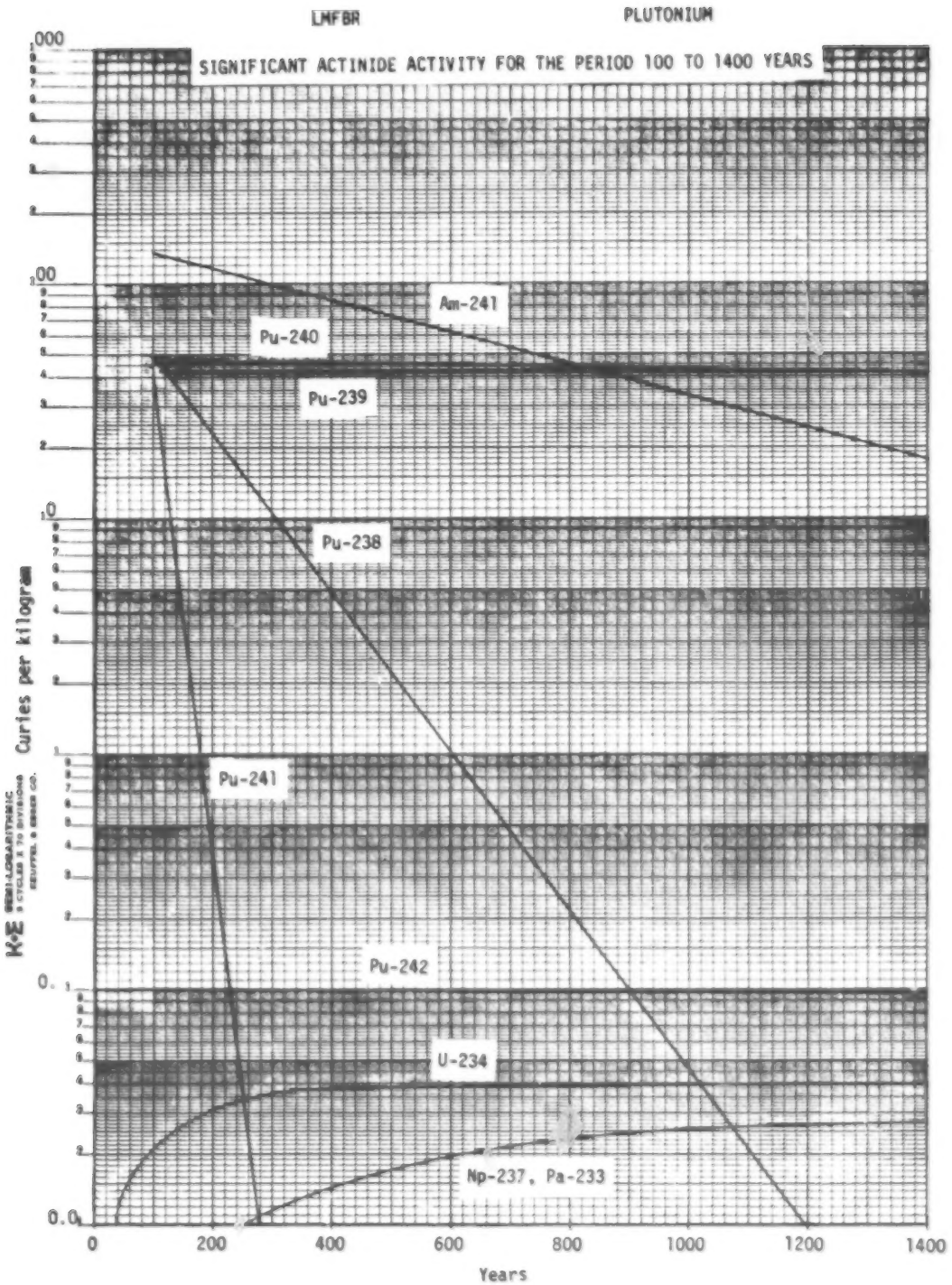

LMFBR
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 100 TO 1400 YEARS
Curies per kilogram
Am-241
Pu-240
Pu-239
Pu-238
Pu-241
Pu-242
U-234
Np-237, Pa-233
0
200
400
600
800
1000
1200
1400
Years

FIGURE 58

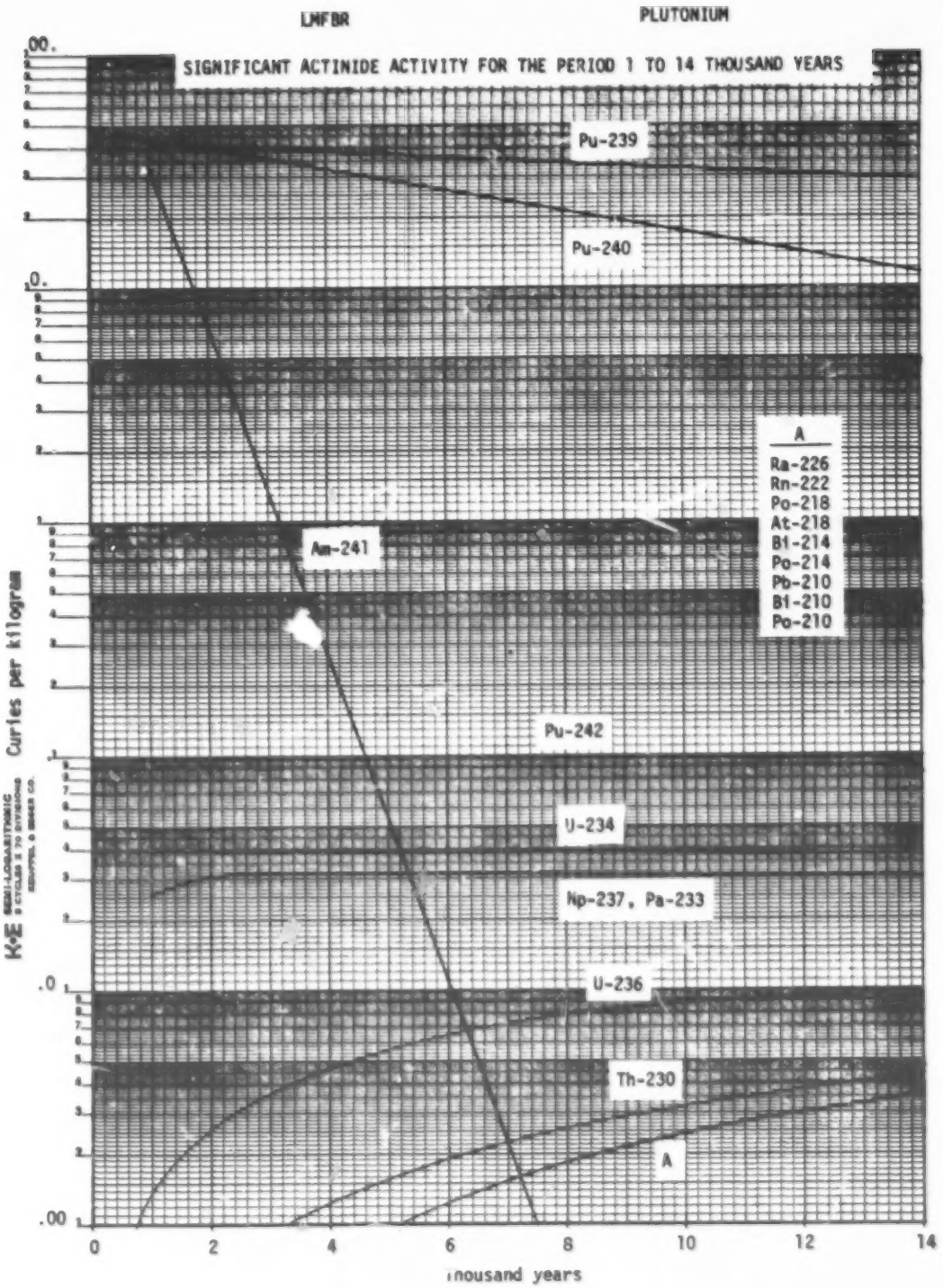

LMFBR
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 14 THOUSAND YEARS
Pu-239
Pu-240
Am-241
Pu-242
U-234
Np-237, Pa-233
U-236
Th-230
A
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
Curies per kilogram
00.
0.
.0
.00
0
2
4
6
8
10
12
14
thousand years

FIGURE 59

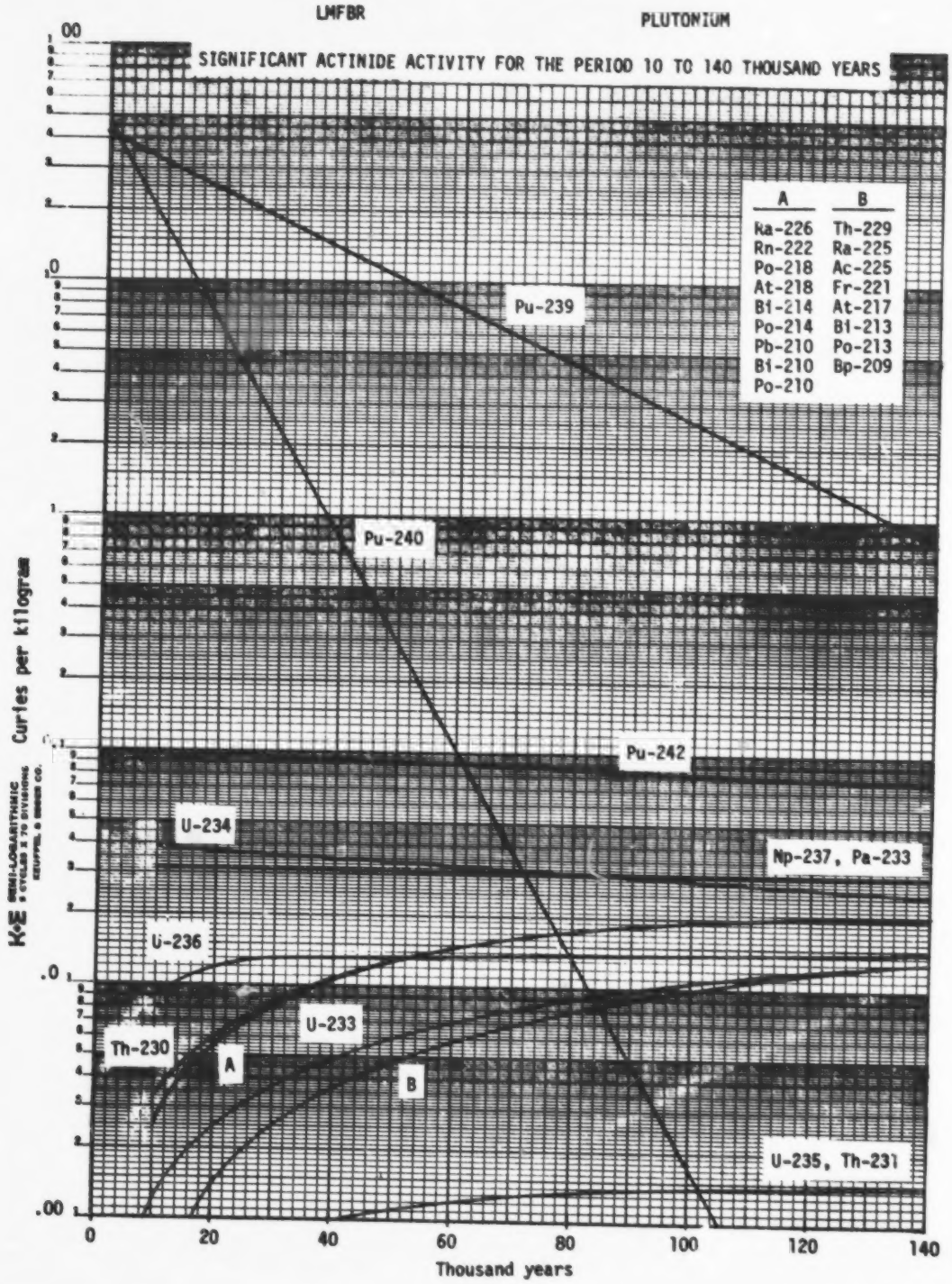
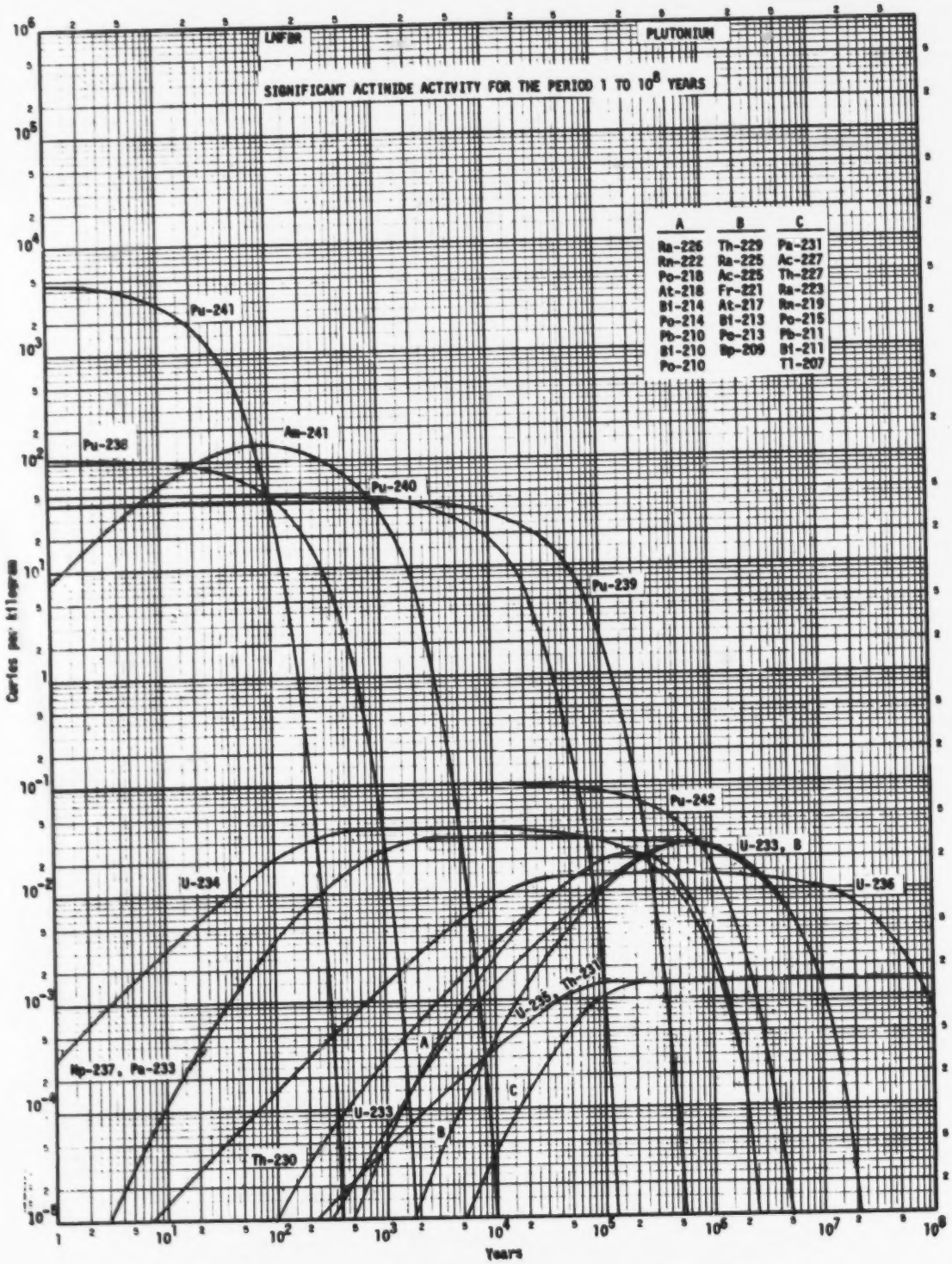

LMFBR
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 10 TO 140 THOUSAND YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
Pu-239
Pu-240
Pu-242
U-234
Np-237, Pa-233
U-236
U-233
Th-230
A
B
U-235, Th-231
Curies per kilogram
.00
.0
0
20
40
60
80
100
120
140
Thousand years

FIGURE 60


LMFBR
PLUTONIUM
SIGNIFICANT ACTINIDE ACTIVITY FOR THE PERIOD 1 TO 10^8 YEARS
A
Ra-226
Rn-222
Po-218
At-218
Bi-214
Po-214
Pb-210
Bi-210
Po-210
B
Th-229
Ra-225
Ac-225
Fr-221
At-217
Bi-213
Po-213
Bp-209
C
Pa-231
Ac-227
Th-227
Ra-223
Rn-219
Po-215
Pb-211
Bi-211
Tl-207
Pu-241
Pu-238
Am-241
Pu-240
Pu-239
Pu-242
U-233, B
U-236
U-234
U-235, Th-231
Np-237, Pa-233
U-233
A
C
B
Th-230
Curies per kilogram
Years

Appendix B

EXPLANATION

The tables in Appendix B present all the data used to prepare the graphs in Appendix A along with some data not plotted. The 12 pairs of tables are in the same order as the graphs. The first table of each pair for spent fuel has a column for the activity of the material charged to the reactor. The second column labeled DISCHARGE is the activity at the time of shipment from the reactor (150 days after reactor shutdown for LWR cases and 100 days after reactor shutdown for the LMFBR). The remaining columns present data for additional cooling times from 1. year to 1000. years. The second table of each pair repeats the activity of the material charged and presents the data for cooling periods from one thousand years to one hundred million (1.0×10^8 years).

The first table of each pair for the waste stream has a column for the activity of the material charged to the reactor. The second column

labeled SEPARATION is the activity at the time of reprocessing (150 days after reactor shutdown for LWR cases and 100 days after reactor shutdown for the LMFBR). The remaining columns present data for additional cooling periods of 1 year to 1000. years. The second table of each pair repeats the activity of the material charged and presents the data for cooling from 1 thousand years to 1 x 10^5 thousand years.

The first table of each pair for the recovered plutonium has a column for the INITIAL activity at the time of reprocessing. The remaining columns present the data for cooling periods of 1 year to 1000 years. The second table of each pair presents the data for cooling periods from 1 thousand years to 100000 thousand years.

Appendix B

Table of Contents

Table	Title	Page
I	LWR Spent Fuel, a mix of 40% BWR Fuel and 60% PWR Fuel - Equilibrium Cycle	B-2
II	LWR Waste - a mixture of 40% BWR Fuel and 60% PWR Fuel - Equilibrium Cycle	B-6
III	Pu Waste - a mixture of 40% BWR Fuel and 60% PWR Fuel - Equilibrium Cycle	B-10
IV	LWR Spent Fuel, a mix of 40% BWR Fuel and 60% PWR Fuel - First Plutonium Recycle	B-12
V	LWR Waste - a mixture of 40% BWR Fuel and 60% PWR Fuel - First Plutonium Recycle	B-16
VI	Pu Waste - a mixture of 40% BWR Fuel and 60% PWR Fuel - First Plutonium Recycle	B-20
VII	LWR Spent Fuel, a mix of 40% BWR Fuel and 60% PWR Fuel - 2nd Plutonium Recycle	B-22
VIII	LWR Waste - a mixture of 40% BWR Fuel and 60% PWR Fuel - 2nd Plutonium Recycle	B-26
IX	Pu Waste - a mixture of 40% BWR Fuel and 60% PWR Fuel - 2nd Plutonium Recycle	B-30
X	LMFBR Spent Fuel - a mixture of Core, Axial Blanket and Radial Blanket	B-32
XI	LMFBR Waste - a mixture of Core, Axial Blanket and Radial Blanket	B-36
XII	LMFBR Plutonium - a mixture of Core, Axial Blanket and Radial Blanket	B-40

TABLE IA

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL - EQUILIBRIUM CYCLE

POWER= 22.02MW, BURNUP= 29964.MWD, FLUX= 1.79E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	DISCHARGE	1.YR	2.5YR	5.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
TL207	0.	1.93E+06	3.11E+06	4.72E+06	8.28E+06	1.21E+05	2.40E+05	4.36E+05	6.05E+05	1.15E+06	2.52E+06	3.95E+06
TL208	0.	1.23E+03	2.15E+03	3.53E+03	5.93E+03	7.24E+03	7.24E+03	5.22E+03	3.55E+03	8.39E+02	2.89E+05	6.19E+07
TL209	0.	1.35E+09	1.52E+09	1.81E+09	2.50E+09	3.35E+09	7.01E+09	1.86E+08	3.75E+08	1.72E+07	9.98E+07	3.04E+06
PB209	0.	6.14E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
PB210	0.	1.72E+09	3.14E+09	6.48E+09	2.23E+08	5.98E+08	5.01E+07	4.60E+06	1.47E+05	1.52E+04	1.20E+03	3.31E+03
PB211	0.	1.94E+06	3.12E+06	4.73E+06	8.30E+06	1.21E+0.	2.40E+05	4.38E+05	6.07E+05	1.16E+06	2.53E+06	3.96E+06
PB212	0.	3.41E+03	5.99E+03	9.80E+03	1.65E+02	2.01E+02	2.02E+02	1.45E+02	9.87E+03	2.33E+03	8.02E+05	1.72E+06
PB214	0.	5.69E+08	5.51E+08	9.15E+08	2.20E+07	4.41E+07	2.01E+06	1.05E+05	2.92E+05	1.95E+04	1.20E+03	3.31E+03
BI210	0.	1.72E+09	3.14E+09	6.48E+09	2.23E+08	5.98E+08	5.01E+07	4.60E+06	1.47E+05	1.52E+04	1.20E+03	3.31E+03
BI211	0.	1.94E+06	3.12E+06	4.73E+06	8.30E+06	1.21E+05	2.40E+05	4.38E+05	6.07E+05	1.16E+06	2.53E+06	3.96E+06
BI212	0.	3.41E+03	5.99E+03	9.80E+03	1.65E+02	2.01E+02	2.02E+02	1.45E+02	9.87E+03	2.33E+03	8.02E+05	1.72E+06
BI213	0.	6.14E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
BI214	0.	3.69E+08	5.51E+08	9.15E+08	2.20E+07	4.41E+07	2.01E+06	1.05E+05	2.92E+05	1.95E+04	1.20E+03	3.31E+03
PO210	0.	1.19E+09	2.34E+09	5.11E+09	1.90E+08	5.98E+08	5.01E+07	4.60E+06	1.47E+05	1.52E+04	1.20E+03	3.31E+03
PO211	0.	5.81E+09	9.35E+09	1.42E+08	2.49E+08	3.63E+08	7.21E+08	1.31E+07	1.82E+07	3.47E+07	7.58E+07	1.19E+06
PO212	0.	2.19E+03	3.83E+03	6.27E+03	1.05E+02	1.29E+02	1.29E+02	9.28E+03	6.32E+03	1.49E+03	5.14E+05	1.10E+06
PO213	0.	6.00E+08	6.76E+08	8.03E+08	1.11E+07	1.49E+07	3.12E+07	8.26E+07	1.67E+06	7.65E+06	4.44E+05	1.35E+04
PO214	0.	5.69E+08	5.51E+08	9.15E+08	2.20E+07	4.41E+07	2.01E+06	1.05E+05	2.92E+05	1.95E+04	1.20E+03	3.31E+03
PO215	0.	1.94E+06	3.12E+06	4.73E+06	8.30E+06	1.21E+05	2.40E+05	4.38E+05	6.07E+05	1.16E+06	2.53E+06	3.96E+06
PO216	0.	3.41E+03	5.99E+03	9.80E+03	1.65E+02	2.01E+02	2.02E+02	1.45E+02	9.87E+03	2.33E+03	8.02E+05	1.72E+06
PO218	0.	5.69E+08	5.51E+08	9.15E+08	2.20E+07	4.41E+07	2.01E+06	1.05E+05	2.92E+05	1.95E+04	1.20E+03	3.31E+03
AT217	0.	6.14E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
RN219	0.	1.94E+06	3.12E+06	4.73E+06	8.30E+06	1.21E+05	2.40E+05	4.38E+05	6.07E+05	1.16E+06	2.53E+06	3.96E+06
RN220	0.	3.41E+03	5.99E+03	9.80E+03	1.65E+02	2.01E+02	2.02E+02	1.45E+02	9.87E+03	2.33E+03	8.02E+05	1.72E+06
RN222	0.	3.69E+08	5.51E+08	9.15E+08	2.20E+07	4.41E+07	2.01E+06	1.05E+05	2.92E+05	1.95E+04	1.20E+03	3.31E+03
FR221	0.	6.14E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
FR223	0.	2.81E+08	4.36E+08	6.41E+08	1.10E+07	1.49E+07	3.36E+07	6.12E+07	8.49E+07	1.02E+08	5.54E+08	5.55E+08
RA223	0.	1.94E+06	3.12E+06	4.73E+06	8.30E+06	1.21E+05	2.40E+05	4.38E+05	6.07E+05	1.16E+06	2.53E+06	3.96E+06
RA224	0.	3.41E+03	5.99E+03	9.80E+03	1.65E+02	2.01E+02	2.02E+02	1.45E+02	9.87E+03	2.33E+03	8.02E+05	1.72E+06
RA225	0.	6.08E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
RA226	0.	3.69E+08	5.51E+08	9.15E+08	2.20E+07	4.41E+07	2.01E+06	1.05E+05	2.92E+05	1.95E+04	1.20E+03	3.31E+03
RA228	0.	4.82E+12	8.31E+12	1.53E+11	3.80E+11	7.22E+11	2.39E+10	6.85E+10	1.20E+09	3.20E+09	7.90E+09	1.33E+08
AC225	0.	6.14E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
AC227	0.	2.01E+06	3.11E+06	4.72E+06	8.29E+06	1.21E+05	2.40E+05	4.37E+05	6.06E+05	1.16E+06	2.53E+06	3.96E+06
AC228	0.	4.82E+12	8.31E+12	1.53E+11	3.80E+11	7.22E+11	2.39E+10	6.85E+10	1.20E+09	3.20E+09	7.90E+09	1.33E+08
TH227	0.	1.90E+06	3.07E+06	4.67E+06	8.19E+06	1.19E+05	2.37E+05	4.31E+05	5.98E+05	1.14E+06	2.49E+06	3.91E+06
TH228	0.	3.40E+03	5.97E+03	9.78E+03	1.64E+02	2.01E+02	2.02E+02	1.45E+02	9.87E+03	2.33E+03	8.02E+05	1.72E+06
TH229	0.	6.06E+08	6.91E+08	8.21E+08	1.14E+07	1.52E+07	3.19E+07	8.45E+07	1.70E+06	7.82E+06	4.53E+05	1.38E+04
TH230	0.	3.64E+05	4.77E+05	6.47E+05	1.05E+04	1.52E+04	1.55E+04	8.07E+04	1.40E+03	1.97E+03	1.00E+02	1.82E+02
TH231	0.	1.69E+02	1.69E+02	1.69E+02	1.69E+02	1.69E+02	1.69E+02	1.70E+02	1.70E+02	1.70E+02	1.71E+02	1.72E+02
TH232	0.	3.38E+11	4.67E+11	6.61E+11	1.11E+10	1.63E+10	3.57E+10	8.10E+10	1.33E+09	3.20E+09	7.90E+09	1.33E+08
TH234	0.	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01
PA231	0.	3.68E+05	3.71E+05	3.77E+05	3.89E+05	4.04E+05	4.58E+05	5.84E+05	7.28E+05	1.27E+04	2.53E+04	3.96E+04
PA233	0.	3.72E+01	3.72E+01	3.73E+01	3.74E+01	3.75E+01	3.84E+01	4.24E+01	4.70E+01	6.23E+01	8.65E+01	1.02E+00
PA234M	0.	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01	3.10E+01
PA234	0.	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04
U232	0.	1.02E+02	1.32E+02	1.64E+02	2.03E+02	2.15E+02	1.97E+02	1.41E+02	9.61E+03	2.27E+03	7.81E+05	1.66E+06
U233	0.	8.84E+05	9.02E+05	9.27E+05	9.83E+05	1.05E+04	1.29E+04	1.90E+04	2.66E+04	6.19E+04	1.75E+05	3.37E+03
U234	2.23E+00	1.30E+00	1.30E+00	1.31E+00	1.34E+00	1.38E+00	1.46E+00	1.64E+00	1.80E+00	2.09E+00	2.22E+00	2.23E+00
U235	6.35E+02	1.69E+02	1.69E+02	1.69E+02	1.69E+02	1.69E+02	1.69E+02	1.70E+02	1.70E+02	1.70E+02	1.71E+02	1.72E+02
U236	3.78E+02	2.03E+01	2.03E+01	2.03E+01	2.03E+01	2.03E+01	2.03E+01	2.04E+01	2.04E+01	2.04E+01	2.71E+01	2.76E+01
U237	0.	2.96E+00	2.69E+00	2.50E+00	2.13E+00	1.74E+00	8.73E+01	1.70E+01	2.01E+02	2.72E+05	3.91E+06	3.78E+06

TABLE IA (Continued)

LWR SPENT FUEL, A MIX OF 60% BWR FUEL AND 40% PWR FUEL - EQUILIBRIUM CYCLE

POWER= 22.02MW, BURNUP= 29960.MWD, FLUX= 1.79E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	DISCHARGE	1.YR	2.5 YR	6.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
U238	3.23E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01
NP237	0.	3.72E-01	3.72E-01	3.73E-01	3.74E-01	3.75E-01	3.86E-01	4.24E-01	4.70E-01	6.23E-01	8.65E-01	1.02E+00
NP239	0.	1.37E+01	1.37E+01	1.37E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.35E+01	1.34E+01	1.29E+01	1.25E+01
PU236	0.	3.63E-01	2.85E-01	1.98E-01	8.44E-02	3.19E-02	8.31E-04	1.07E-07	9.99E-12	1.44E-27	0.	0.
PU238	0.	2.48E+03	2.54E+03	2.53E+03	2.46E+03	2.39E+03	2.13E+03	1.62E+03	1.19E+03	3.72E+02	2.54E+01	1.30E+00
PU239	0.	2.92E+02	2.92E+02	2.92E+02	2.92E+02	2.92E+02	2.92E+02	2.91E+02	2.91E+02	2.90E+02	2.87E+02	2.84E+02
PU240	0.	4.60E+02	4.60E+02	4.60E+02	4.61E+02	4.61E+02	4.61E+02	4.60E+02	4.59E+02	4.52E+02	4.34E+02	4.14E+02
PU241	0.	1.12E+05	1.07E+05	1.00E+05	8.49E+04	7.04E+04	3.49E+04	6.77E+03	1.04E+03	1.09E+00	1.56E-01	1.51E-01
PU242	0.	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00	1.62E+00
PU243	0.	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07
AM241	0.	1.87E+02	3.62E+02	6.10E+02	1.12E+03	1.61F+03	2.77E+03	3.55E+03	3.51E+03	2.79E+03	1.59E+03	8.41E+02
AM242M	0.	1.14E+01	1.14E+01	1.13E+01	1.11E+01	1.09E+01	1.02E+01	8.68E+00	7.23E+00	3.65E+00	7.40E-01	1.19E-01
AM242	0.	1.14E+01	1.14E+01	1.13E+01	1.11E+01	1.09E+01	1.02E+01	8.68E+00	7.23E+00	3.65E+00	7.40E-01	1.19E-01
AM243	0.	1.37E+01	1.37E+01	1.37E+01	1.36E+01	1.36E+01	1.36E+01	1.36E+01	1.35E+01	1.34E+01	1.29E+01	1.25E+01
CM242	0.	1.97E+04	4.18E+03	4.15E+02	1.09E+01	8.90E+00	6.35E+00	7.11E+00	5.93E+00	2.99E+00	6.07E-01	9.79E-02
CM243	0.	4.08E+00	3.99E+00	3.86E+00	3.58E+00	3.28E+00	2.37E+00	1.11E+00	6.68E-01	1.82E-02	9.27E-06	1.60E-09
CM244	0.	1.25E+03	1.20E+03	1.13E+03	9.92E+02	8.51E+02	4.79E+02	1.25E+02	2.71E+01	8.69E-02	1.32E-07	3.24E-14
CM245	0.	1.64E-01	1.64E-01	1.64E-01	1.64E-01	1.64E-01	1.64E-01	1.63E+01	1.63E+01	1.61E+01	1.50E+01	1.51E+01
CM246	0.	3.06E-02	3.06E-02	3.06E-02	3.05E-02	3.05E-02	3.05E-02	3.03E-02	3.01E-02	2.95E-02	2.80E-02	2.64E-02
CM247	0.	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07
CM248	0.	3.01E-07	3.01E-07	3.01E-07	3.01E-07	3.02E-07	3.01E-07	3.01E-07	3.01E-07	3.01E-07	3.01E-07	3.01E-07
BK249	0.	9.16E-04	4.09E-04	1.22E-04	7.27E-06	2.89E-07	1.62E-12	9.06E-25	8.99E-39	0.	0.	0.
CF249	0.	1.32E-06	2.55E-06	3.24E-06	3.50E-06	3.49E-06	3.39E-06	3.16E-06	2.92E-06	2.14E-06	1.09E-06	4.97E-07
CF250	0.	1.28E-05	1.21E-05	1.12E-05	9.30E-06	7.53E-06	3.40E-06	5.52E-07	6.39E-08	2.24E-11	2.79E-14	2.74E-14
CF251	0.	9.24E-08	9.23E-08	9.22E-08	9.20E-08	9.17E-08	9.06E-08	8.82E-08	8.56E-08	7.82E-08	5.82E-08	4.28E-08
CF252	0.	1.42E-05	1.09E-05	7.38E-06	2.95E-06	1.04E-06	2.06E-08	2.15E-12	6.00E-17	5.21E-34	0.	0.
SUBTOT	2.66E+00	1.37E+05	1.16E+05	1.06E+05	9.03E+04	7.61E+04	4.11E+04	1.29E+04	8.57E+03	3.95E+03	2.38E+03	1.58E+03
TOTAL	2.66E+00	1.37E+05	1.16E+05	1.06E+05	9.03E+04	7.61E+04	4.11E+04	1.29E+04	8.57E+03	3.95E+03	2.38E+03	1.58E+03

TABLE IB

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL = EQUILIBRIUM CYCLE

POWER= 22.02MW, BURNUP= 29900.MWD, FLUX= 1.79E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
TL207	0.	3.95E-04	9.30E-04	2.10E-03	3.53E-03	8.27E-03	1.66E-02	2.20E-02	2.69E-02	2.70E-02	2.68E-02	2.45E-02
TL208	0.	6.19E-07	1.23E-08	3.14E-08	5.52E-08	1.53E-07	3.45E-07	6.74E-07	2.06E-06	6.85E-06	6.85E-05	2.20E-04
TL209	0.	3.04E-06	2.30E-05	1.39E-04	3.82E-04	1.61E-03	4.89E-03	8.14E-03	1.80F-02	2.01E-02	..03E-03	2.45E-16
PB209	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
PB210	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
PB211	0.	3.96E-04	9.33E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.21E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
PB212	0.	1.72E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
PB214	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
BI210	0.	3.31E-03	1.80E-02	7.14E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
BI211	0.	3.96E-04	9.33E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.21E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
BI212	0.	1.72E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
BI213	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
BI214	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
PO210	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
PO211	0.	1.19E-06	2.80E-06	6.50E-06	1.06E-05	2.49E-05	6.99E-05	6.42E-05	8.11E-05	8.13E-05	8.06E-05	7.5PE-05
PO212	0.	1.10E-06	2.19E-08	5.59E-08	9.81E-08	2.73E-07	7.03E-07	1.20E-06	3.66E-06	1.22E-05	1.08E-04	4.02E-04
PO213	0.	1.35E-04	1.02E-03	6.19E-03	1.61E-02	7.17E-02	2.17E-01	3.62E-01	8.00E-01	8.94E-01	4.56E-02	1.09E-14
PO214	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
PO215	0.	3.96E-04	9.33E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.21E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
PO216	0.	1.72E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
PO218	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
AT217	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
RN219	0.	3.96E-04	9.33E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.21E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
RN220	0.	1.72E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
RN222	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
FR221	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
FR223	0.	5.55E-06	1.31E-05	3.03E-05	4.96E-05	1.16E-04	2.33E-04	3.09E-04	3.78E-04	3.79E-04	3.78E-04	3.44E-04
RA223	0.	3.96E-04	9.33E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.21E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
RA224	0.	1.72E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10F-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
RA225	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
RA226	0.	3.31E-03	1.80E-02	7.18E-02	1.42E-01	3.86E-01	8.43E-01	1.14E+00	1.31E+00	4.86E-01	3.15E-01	3.11E-01
RA228	0.	1.33E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
AC225	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
AC227	0.	3.96E-04	9.33E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.21E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
AC228	0.	1.33E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
TH227	0.	3.91E-04	9.20E-04	2.14E-03	3.49E-03	8.18E-03	1.64E-02	2.17E-02	2.66E-02	2.67E-02	2.65E-02	2.42E-02
TH228	0.	1.72E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
TH229	0.	1.38E-04	1.04E-03	6.33E-03	1.65E-02	7.33E-02	2.22E-01	3.70E-01	8.18E-01	9.14E-01	4.66E-02	1.11E-14
TH230	0.	1.62E-02	4.67E-02	1.11E-01	1.82E-01	4.20E-01	8.57E-01	1.13E+00	1.30E+00	4.66E-01	3.15E-01	3.11E-01
TH231	0.	1.72E-02	1.70E-02	1.05E-02	1.94E-02	2.21E-02	2.52E-02	2.65E-02	2.71E-02	2.71E-02	2.69E-02	2.46E-02
TH232	0.	1.33E-06	3.42E-08	8.73E-08	1.53E-07	4.26E-07	1.10E-06	1.87E-06	5.72E-06	1.90E-05	1.88E-04	6.29E-04
TH234	0.	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.15E-01	3.11E-01
PA231	0.	3.96E-04	9.32E-04	2.17E-03	3.54E-03	8.30E-03	1.66E-02	2.20E-02	2.70E-02	2.71E-02	2.69E-02	2.46E-02
PA233	0.	1.02E+00	1.17E+00	1.19E+00	1.18E+00	1.18E+00	1.17E+00	1.15E+00	1.08E+00	8.60E-01	4.66E-02	1.03E-14
PA234M	0.	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.15E-01	3.11E-01
PA234	0.	3.16E-04	3.16E-04	3.16E-04	3.16E-04	3.16E-04	3.16E-04	3.16E-04	3.16E-04	3.16E-04	3.15E-04	3.11E-04
U233	0.	3.37E-03	1.05E-02	2.80E-02	4.70E-02	1.18E-01	2.65E-01	4.05E-01	8.10E-01	9.13E-01	4.66E-02	1.11E-14
U234	2.23E+00	2.23E+00	2.22E+00	2.20E+00	2.18E+00	2.10E+00	1.93E+00	1.76E+00	1.14E+00	4.31E-01	3.15E-01	3.11E-01
U235	6.35E-02	1.72E-02	1.70E-02	1.05E-02	1.94E-02	2.21E-02	2.52E-02	2.65E-02	2.71E-02	2.71E-02	2.69E-02	2.46E-02
U236	3.78E-02	2.76E-01	2.93E-01	3.23E-01	3.47E-01	3.8.E-01	3.93E-01	3.93E-01	3.91E-01	3.83E-01	2.95E-01	2.17E-02
U237	0.	3.7AE-06	3.33E-06	2.48E-06	1.78E-06	5.05E-07	2.68E-08	9.39E-10	4.89E-17	0.	0.	0.
U238	3.23E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.16E-01	3.15E-01	3.11E-01

TABLE IB (Continued)

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL - EQUILIBRIUM CYCLE

POWER= 22,02MW, BURNUP= 29946,MWD, FLUX= 1,79E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	1.YR	2.5YR	5.YR	10.YR	25.YR	40.YR	100.YR	300.YR	1000.YR	10000.YR	100000.YR
U240	0.	2.31E+12	5.76E+12	1.38E+11	2.29E+11	5.64E+11	1.31E+10	2.10E+10	5.23E+10	1.00E+09	1.08E+09	5.18E+10
NP237	0.	1.02E+00	1.17E+00	1.19E+00	1.18E+00	1.18E+00	1.17E+00	1.15E+00	1.08E+00	8.60E-01	6.66E-02	1.83E-14
NP239	0.	1.25E+01	1.09E+01	7.93E+00	5.52E+00	1.42E+00	5.95E-02	1.59E-03	1.03E-07	9.98E-08	6.82E-08	1.52E-09
NP240*	0.	2.31E-12	5.76E-12	1.38E-11	2.29E-11	5.64E-11	1.31E-10	2.10E-10	5.23E-10	1.00E-09	1.08E-09	5.18E-10
PU239	0.	2.84E+02	2.73E+02	2.48E+02	2.22E+02	1.66E+02	5.42E+01	1.74E+01	5.94E-02	1.00E-07	6.82E-08	1.52E-09
PU240	0.	4.18E+02	3.59E+02	2.51E+02	1.64E+02	3.57E+01	5.44E-01	1.44E-02	5.44E-10	1.01E-09	1.09E-09	5.11E-10
PU241	0.	1.51E+01	1.33E+01	9.94E+02	7.11E+02	2.02E+02	1.07E+03	3.75E+05	1.96E-12	0.	0.	0.
PU242	0.	1.67E+00	1.61E+00	1.60E+00	1.59E+00	1.55E+00	1.45E+00	1.35E+00	9.36E-01	2.60E-01	1.85E-08	0.
PU243	0.	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.03E-07	9.98E-08	6.82E-08	1.52E-09
PU244	0.	2.31E-12	5.77E-12	1.38E-11	2.29E-11	5.64E-11	1.31E-10	2.10E-10	5.23E-10	1.01E-09	1.09E-09	5.11E-10
AM241	0.	8.81E+02	7.64E+01	3.86E-01	7.50E-02	2.02E-02	1.07E-03	3.75E-05	2.06E-12	0.	0.	0.
AM243	0.	1.25E+01	1.09E+01	7.93E+00	5.52E+00	1.42E+00	5.95E-02	1.59E-03	1.01E-07	9.98E-08	6.82E-08	1.52E-09
CM245	0.	1.51E-01	1.33E-01	9.92E-02	7.09E-02	2.02E-02	1.07E-03	3.75E-05	1.95E-12	0.	0.	0.
CM246	0.	2.60E-02	2.12E-02	1.20E-02	7.02E-03	7.73E-04	4.49E-06	1.25E-08	2.54E-19	1.96E-31	0.	0.
CM247	0.	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.04E-07	1.03E-07	9.98E-08	6.82E-08	1.52E-09
CM248	0.	3.01E-07	3.00E-07	2.98E-07	2.96E-07	2.87E-07	2.68E-07	2.48E-07	1.07E-07	4.21E-08	8.50E-14	0.
SUBTOT	2.66E+00	1.58E+03	7.38E+02	5.23E+02	4.09E+02	1.97E+02	7.30E+01	3.92E+01	2.03E+01	1.71E+01	5.52E+00	4.65E+00
TOTAL	2.66E+00	1.58E+03	7.38E+02	5.23E+02	4.09E+02	1.97E+02	7.30E+01	3.92E+01	2.03E+01	1.71E+01	5.52E+00	4.65E+00

TABLE IIA

LWR WASTE = A MIXTURE OF 60% BWR FUEL AND 40% PWR FUEL = EQUILIBRIUM CYCLE

POWER= 2.12MW, BURNUP= 2880.MWD, FLUX= 1.72E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	SEPARATION	1.0E+00YR	2.5E+00YR	6.0E+00YR	1.0E+01YR	2.5E+01YR	6.0E+01YR	1.0E+02YR	2.5E+02YR	6.0E+02YR	1.0E+03YR
TL207	0.	1.86E-07	2.99E-07	4.50E-07	7.78E-07	1.11E-06	2.04E-06	3.05E-06	3.41E-06	3.59E-06	3.69E-06	3.80E-06
TL208	0.	1.18E-04	8.37E-05	5.07E-05	1.90E-05	1.01E-05	7.01E-06	5.02E-06	3.42E-06	8.07E-07	2.78E-08	5.97E-10
TL209	0.	1.30E-10	1.29E-10	1.30E-10	1.35E-10	1.47E-10	2.34E-10	7.20E-10	1.78E-09	1.02E-08	9.85E-08	1.02E-07
PB209	0.	5.90E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
PB210	0.	1.65E-10	2.99E-10	5.84E-10	1.62E-09	3.38E-09	1.45E-08	5.89E-08	1.30E-07	5.89E-07	3.46E-06	9.18E-06
PB211	0.	1.86E-07	2.99E-07	4.52E-07	7.80E-07	1.11E-06	2.04E-06	3.06E-06	3.42E-06	3.60E-06	3.70E-06	3.81E-06
PB212	0.	3.28E-04	2.32E-04	1.41E-04	5.29E-05	2.80E-05	1.95E-05	1.40E-05	9.49E-06	2.24E-06	7.72E-08	1.66E-09
PB214	0.	3.55E-09	5.07E-09	7.35E-09	1.27E-08	1.89E-08	4.30E-08	1.06E-07	1.92E-07	7.16E-07	3.46E-06	9.18E-06
BI210	0.	1.65E-10	2.99E-10	5.85E-10	1.62E-09	3.38E-09	1.45E-08	5.89E-08	1.30E-07	5.89E-07	3.46E-06	9.18E-06
BI211	0.	1.86E-07	2.99E-07	4.52E-07	7.80E-07	1.11E-06	2.04E-06	3.06E-06	3.42E-06	3.60E-06	3.70E-06	3.81E-06
BI212	0.	3.28E-04	2.32E-04	1.41E-04	5.28E-05	2.80E-05	1.95E-05	1.40E-05	9.49E-06	2.24E-06	7.72E-08	1.66E-09
BI213	0.	5.90E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
BI214	0.	3.55E-09	5.07E-09	7.35E-09	1.27E-08	1.89E-08	4.30E-08	1.06E-07	1.92E-07	7.16E-07	3.46E-06	9.18E-06
PO210	0.	1.15E-10	2.24E-10	4.71E-10	1.42E-09	3.38E-09	1.45E-08	5.89E-08	1.30E-07	5.89E-07	3.46E-06	9.18E-06
PO211	0.	5.59E-10	8.98E-10	1.36E-09	2.34E-09	3.34E-09	6.13E-09	9.18E-09	1.03E-08	1.08E-08	1.11E-08	1.14E-08
PO212	0.	2.10E-04	1.49E-04	9.02E-05	3.39E-05	1.79E-05	1.25E-05	8.93E-06	6.08E-06	1.43E-06	4.94E-08	1.06E-09
PO213	0.	5.77E-09	5.72E-09	5.77E-09	6.02E-09	6.52E-09	1.04E-08	3.20E-08	7.81E-08	4.56E-07	2.60E-06	7.21E-06
PO214	0.	3.55E-09	5.07E-09	7.35E-09	1.27E-08	1.89E-08	4.30E-08	1.06E-07	1.92E-07	7.16E-07	3.46E-06	9.18E-06
PO215	0.	1.86E-07	2.99E-07	4.52E-07	7.80E-07	1.11E-06	2.04E-06	3.06E-06	3.42E-06	3.60E-06	3.70E-06	3.81E-06
PO216	0.	3.28E-04	2.32E-04	1.41E-04	5.28E-05	2.80E-05	1.95E-05	1.40E-05	9.49E-06	2.24E-06	7.72E-08	1.66E-09
PO218	0.	3.55E-09	5.07E-09	7.35E-09	1.27E-08	1.89E-08	4.30E-08	1.06E-07	1.92E-07	7.16E-07	3.46E-06	9.18E-06
AT217	0.	5.90E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
RN219	0.	1.86E-07	2.99E-07	4.52E-07	7.80E-07	1.11E-06	2.04E-06	3.06E-06	3.42E-06	3.60E-06	3.70E-06	3.81E-06
RN220	0.	3.28E-04	2.32E-04	1.41E-04	5.28E-05	2.80E-05	1.95E-05	1.40E-05	9.49E-06	2.24E-06	7.72E-08	1.66E-09
RN222	0.	3.55E-09	5.07E-09	7.35E-09	1.27E-08	1.89E-08	4.30E-08	1.06E-07	1.92E-07	7.16E-07	3.46E-06	9.18E-06
FR221	0.	5.90E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
FR223	0.	2.71E-09	4.18E-09	6.32E-09	1.09E-08	1.56E-08	2.86E-08	4.28E-08	4.79E-08	5.04E-08	5.19E-08	5.34E-08
RA223	0.	1.86E-07	2.99E-07	4.52E-07	7.80E-07	1.11E-06	2.04E-06	3.06E-06	3.42E-06	3.60E-06	3.70E-06	3.81E-06
RA224	0.	3.28E-04	2.32E-04	1.41E-04	5.28E-05	2.80E-05	1.95E-05	1.40E-05	9.49E-06	2.24E-06	7.72E-08	1.66E-09
RA225	0.	5.85E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
RA226	0.	3.55E-09	5.07E-09	7.35E-09	1.27E-08	1.89E-08	4.30E-08	1.06E-07	1.92E-07	7.16E-07	3.46E-06	9.18E-06
AC225	0.	5.90E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
AC227	0.	1.93E-07	2.99E-07	4.51E-07	7.79E-07	1.11E-06	2.04E-06	3.06E-06	3.42E-06	3.60E-06	3.70E-06	3.81E-06
TH227	0.	1.83E-07	2.95E-07	4.45E-07	7.69E-07	1.10E-06	2.01E-06	3.02E-06	3.38E-06	3.55E-06	3.65E-06	3.76E-06
TH228	0.	3.27E-04	2.31E-04	1.40E-04	5.26E-05	2.79E-05	1.95E-05	1.40E-05	9.49E-06	2.24E-06	7.72E-08	1.66E-09
TH229	0.	5.83E-09	5.85E-09	5.90E-09	6.16E-09	6.67E-09	1.07E-08	3.27E-08	7.99E-08	4.66E-07	2.66E-06	7.37E-06
TH230	0.	3.50E-06	3.51E-06	3.53E-06	3.57E-06	3.62E-06	3.85E-06	4.60E-06	5.72E-06	1.10E-05	2.88E-05	4.95E-05
TH231	0.	1.63E-03	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.64E-05	1.65E-05	1.66E-05
TH234	0.	3.04E-02	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04
PA231	0.	3.50E-06	3.50E-06	3.50E-06	3.50E-06	3.50E-06	3.55E-06	3.55E-06	3.57E-06	3.61E-06	3.70E-06	3.81E-06
PA233	0.	3.58E-02	3.58E-02	3.58E-02	3.58E-02	3.59E-02	3.60E-02	3.62E-02	3.64E-02	3.72E-02	3.85E-02	3.93E-02
PA233M	0.	3.04E-02	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04
PA234	0.	3.04E-05	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07
U232	0.	9.81E-06	1.27E-05	1.58E-05	1.95E-05	2.07E-05	1.90E-05	1.38E-05	9.24E-06	2.14E-06	7.51E-08	1.60E-09
U233	0.	8.50E-08	2.55E-07	5.01E-07	1.04E-06	1.65E-06	3.96E-06	9.36E-06	1.56E-05	3.92E-05	9.59E-05	1.62E-04
U234	2.15E-01	1.25E-03	1.27E-03	1.31E-03	1.43E-03	1.55E-03	1.99E-03	2.80E-03	3.62E-03	5.15E-03	5.96E-03	6.05E-03
U235	6.10E-03	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.63E-05	1.64E-05	1.65E-05	1.66E-05
U236	3.64E-03	2.53E-04	2.53E-04	2.53E-04	2.53E-04	2.53E-04	2.53E-04	2.54E-04	2.55E-04	2.58E-04	2.66E-04	2.74E-04
U237	0.	2.65E-03	2.58E-03	2.41E-03	2.04E-03	1.70E-03	8.40E-04	1.63E-04	2.55E-05	4.10E-07	3.76E-07	3.63E-07
U238	3.11E-02	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04
NP237	0.	3.58E-02	3.58E-02	3.58E-02	3.58E-02	3.59E-02	3.60E-02	3.62E-02	3.64E-02	3.72E-02	3.85E-02	3.93E-02
NP239	0.	1.31E+00	1.31E+00	1.31E+00	1.31E+00	1.31E+00	1.31E+00	1.31E+00	1.30E+00	1.28E+00	1.24E+00	1.20E+00

TABLE IIA (Continued)

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = EQUILIBRIUM CYCLE

POWER= 2,12MW, BURNUP= 2880,MWD, FLUX= 1,72E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHANGE	SEPARATION	1,0E+00YR	2,5E+00YR	6,0E+00YR	1,0E+01YR	2,5E+01YR	6,0E+01YR	1,0E+02YR	2,5E+02YR	6,0E+02YR	1,0E+03YR
PU236	0,	3,69E-04	2,74E-04	1,90E-04	8,12E-05	3,07E-05	8,00E-07	1,61E-10	9,61E-15	1,39E-30	0,	0,
PU238	0,	2,39E+00	9,83E+00	1,15E+01	1,18E+01	1,11F+01	9,97E+00	7,77E+00	5,86E+00	2,09E+00	2,32E-01	2,68E-02
PU239	0,	2,81E-01	2,81E-01	2,81E-01	2,81E-01	2,81E-01	2,82E-01	2,83E-01	2,84E-01	2,88E-01	2,98E-01	3,09E-01
PU240	0,	4,43E-01	4,55E-01	4,72E-01	5,08E-01	5,44E-01	6,39E-01	7,28E-01	7,50E-01	7,45E-01	7,19E-01	6,90E-01
PU241	0,	1,08E+02	1,03E+02	9,62E+01	8,17E+01	6,77E+01	3,36E+01	6,53E+00	1,02E+00	1,64E-02	1,50E-02	1,45E-02
PU242	0,	1,56E-03	1,56E-03	1,56E-03	1,56E-03	1,56E-03	1,56E-03	1,58E-03	1,59E-03	1,61E-03	1,63E-03	1,64E-03
PU243	0,	1,00E-10	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08
AM241	0,	1,80E+01	1,81E+01	1,83E+01	1,87E+01	1,91F+01	1,98E+01	1,96E+01	1,85E+01	1,46E+01	8,36E+00	4,41E+00
AM242M	0,	1,10E+00	1,09E+00	1,08E+00	1,07E+00	1,05E+00	9,79E-01	8,35E-01	6,95E-01	3,51E-01	7,12E-02	1,15E-02
AM242	0,	1,10E+00	1,09E+00	1,08E+00	1,07E+00	1,05E+00	9,79E-01	8,35E-01	6,95E-01	3,51E-01	7,12E-02	1,15E-02
AM243	0,	1,31E+00	1,31E+00	1,31E+00	1,31E+00	1,31E+00	1,31E+00	1,31E+00	1,30E+00	1,28E+00	1,24E+00	1,20E+00
CM242	0,	1,90E+03	4,02E+02	3,99E+01	1,05E+00	8,62E-01	8,03E-01	6,84E-01	5,70E-01	2,88E-01	5,84E-02	9,42E-03
CM243	0,	3,92E-01	3,84E-01	3,72E-01	3,44E-01	3,10E-01	2,28E-01	1,07E-01	4,50E-02	1,75E-03	8,92E-07	1,54E-10
CM244	0,	1,20E+02	1,16E+02	1,09E+02	9,54E+01	8,18E+01	4,61E+01	1,21E+01	2,61E+00	8,36E-03	1,27E-08	3,12E-15
CM245	0,	1,58E-02	1,58E-02	1,58E-02	1,58E-02	1,58E-02	1,57E-02	1,57E-02	1,56E-02	1,55E-02	1,50E-02	1,45E-02
CM246	0,	2,94E-03	2,94E-03	2,94E-03	2,94E-03	2,94E-03	2,93E-03	2,91E-03	2,90E-03	2,83E-03	2,69E-03	2,54E-03
CM247	0,	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08	1,00E-08
CM248	0,	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08	2,90E-08
BK249	0,	8,81E-05	3,93E-05	1,17E-05	6,99E-07	2,78E-08	1,56E-13	8,71E-26	8,65E-40	0,	0,	0,
CF249	0,	1,27E-07	2,45E-07	3,12E-07	3,37E-07	3,30E-07	3,20E-07	3,04E-07	2,81E-07	2,09E-07	1,05E-07	4,78E-08
CF250	0,	1,23E-06	1,17E-06	1,08E-06	8,95E-07	7,24E-07	3,27E-07	5,12E-08	6,15F-09	2,18E-12	2,68E-15	2,64E-15
CF251	0,	8,89E-09	8,88E-09	8,87E-09	8,85E-09	8,82E-09	8,72E-09	8,49E-09	8,23E-09	7,33E-09	5,60E-09	4,12E-09
CF252	0,	1,37E-06	1,05E-06	7,10E-07	2,84E-07	9,96E-08	1,96E-09	2,05E-13	5,77E-18	5,01E-35	0,	0,
SUBTOT	2,56E-01	2,15E+03	6,55E+02	2,81E+02	2,14E+02	1,87E+02	1,16E+02	5,21E+01	3,36E+01	2,14E+01	1,24E+01	7,99E+00
TOTAL	2,56E-01	2,15E+03	6,55E+02	2,81E+02	2,14E+02	1,87E+02	1,16E+02	5,21E+01	3,36E+01	2,14E+01	1,24E+01	7,99E+00

TABLE IIB

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = EQUILIBRIUM CYCLE

POWER= 2.12MW, BURNUP= 2880.MWD, FLUX= 1.72E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	1.0E+00KYR	2.5E+00KYR	6.0E+00KYR	1.0E+01KYR	2.5E+01KYR	6.0E+01KYR	1.0E+02KYR	3.0E+02KYR	1.0E+03KYR	1.0E+04KYR	1.0E+05KYR
TL207	0.	3.80E-06	4.21E-06	5.18E-06	6.31E-06	1.09E-05	2.16E-05	3.04E-05	3.98E-05	4.00E-05	3.96E-05	3.83E-05
TL208	0.	5.97E-10	1.35E-11	3.38E-11	6.02E-11	1.74E-10	4.01E-10	7.93E-10	2.44E-09	8.14E-09	7.20E-08	2.49E-07
TL209	0.	1.62E-07	9.93E-07	5.24E-06	1.30E-05	5.57E-05	1.67E-04	2.76E-04	6.10E-04	6.81E-04	3.47E-05	8.30E-18
PB209	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
PB210	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
PB211	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
PB212	0.	1.66E-09	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
PB214	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
BI210	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
BI211	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
BI212	0.	1.66E-09	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
BI213	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
BI214	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
PO210	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
PO211	0.	1.14E-08	1.27E-08	1.56E-08	1.90E-08	3.24E-08	6.51E-08	9.16E-08	1.20E-07	1.20E-07	1.19E-07	1.09E-07
PO212	0.	1.06E-09	2.40E-11	6.01E-11	1.07E-10	3.10E-10	8.20E-10	1.41E-09	4.34E-09	1.45E-08	1.28E-07	4.79E-07
PO213	0.	7.21E-06	4.42E-05	2.33E-04	5.80E-04	2.48E-03	7.41E-03	1.23E-02	2.71E-02	3.03E-02	1.54E-03	3.69E-16
PO214	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
PO215	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
PO216	0.	1.66E-09	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
PO218	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
AT217	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
RN219	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
RN220	0.	1.66E-09	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
RN222	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
FR221	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
FR223	0.	5.34E-08	5.91E-08	7.27E-08	8.86E-08	1.53E-07	3.04E-07	4.27E-07	5.59E-07	5.61E-07	5.56E-07	5.09E-07
RA223	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
RA224	0.	1.66E-09	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
RA225	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
RA226	0.	9.18E-06	4.90E-05	1.96E-04	3.86E-04	1.05E-03	2.28E-03	3.07E-03	3.34E-03	8.19E-04	3.03E-04	2.99E-04
RA223	0.	1.62E-11	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
AC225	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
AC227	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
AC228	0.	1.62E-11	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
TH227	0.	3.76E-06	4.16E-06	5.12E-06	6.24E-06	1.08E-05	2.14E-05	3.01E-05	3.94E-05	3.95E-05	3.92E-05	3.59E-05
TH228	0.	1.66E-09	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
TH229	0.	7.37E-06	4.51E-05	2.38E-04	5.93E-04	2.53E-03	7.57E-03	1.26E-02	2.77E-02	3.10E-02	1.58E-03	3.77E-16
TH230	0.	4.95E-05	1.27E-04	3.03E-04	4.96E-04	1.14E-03	2.26E-03	3.04E-03	3.33E-03	8.19E-04	3.03E-04	2.99E-04
TH231	0.	1.66E-05	1.71E-05	1.81E-05	1.99E-05	2.59E-05	3.44E-05	3.83E-05	4.01E-05	4.01E-05	3.97E-05	3.84E-05
TH232	0.	1.62E-11	3.74E-11	9.39E-11	1.67E-10	4.84E-10	1.28E-09	2.20E-09	6.79E-09	2.26E-08	2.00E-07	7.49E-07
TH234	0.	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.03E-04	2.99E-04
PA231	0.	3.81E-06	4.22E-06	5.19E-06	6.33E-06	1.09E-05	2.17E-05	3.05E-05	3.99E-05	4.01E-05	3.97E-05	3.84E-05
PA233	0.	3.93E-02	4.01E-02	4.01E-02	4.01E-02	3.99E-02	3.95E-02	3.90E-02	3.65E-02	2.91E-02	1.58E-03	3.48E-16
PA234M	0.	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.03E-04	2.99E-04
PA234	0.	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.03E-07	2.99E-07
U233	0.	1.02E-04	4.16E-04	1.01E-03	1.67E-03	4.05E-03	9.01E-03	1.38E-02	2.74E-02	3.09E-02	1.58E-03	3.76E-16
U234	2.15E-01	6.05E-03	6.05E-03	5.99E-03	5.91E-03	5.69E-03	5.19E-03	4.67E-03	2.80E-03	6.53E-04	3.03E-04	2.99E-04
U235	6.10E-03	1.66E-05	1.71E-05	1.83E-05	1.99E-05	2.59E-05	3.46E-05	3.83E-05	4.01E-05	4.01E-05	3.97E-05	3.84E-05
U236	3.64E-03	2.74E-04	3.02E-04	3.52E-04	3.91E-04	4.52E-04	4.68E-04	4.68E-04	4.65E-04	4.56E-04	3.51E-04	2.58E-05
U237	0.	3.63E-07	3.20E-07	2.39E-07	1.71E-07	4.88E-08	2.58E-09	9.02E-11	4.70E-16	0.	0.	0.
U238	3.11E-02	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.04E-04	3.03E-04	2.99E-04

TABLE IIB (Continued)

LWR WASTE = A MIXTURE OF 40% PWR FUEL AND 60% BWR FUEL = EQUILIBRIUM CYCLE

POWER= 2,12MW, BURNUP= 2880,MWD, FLUX= 1,72E+12N/CM**2*SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	1.0E+00KYR	2,5E+00KYR	5,0E+00KYR	1,0E+01KYR	2,5E+01KYR	5,0E+01KYR	1,0E+02KYR	3,0E+02KYR	1,0E+03KYR	1,0E+04KYR	1,0E+05KYR
NP237	0,	3,93E-02	4,01E-02	4,01E-02	4,01E-02	3,99E-02	3,95E-02	3,90E-02	3,65E-02	2,91E-02	1,58E-03	3,48E-16
NP239	0,	1,20E+00	1,05E+00	7,63E-01	5,31E-01	1,36E-01	5,73E-03	1,53E-04	9,89E-09	9,60E-09	6,56E-09	1,46E-10
PU239	0,	3,09E+01	3,42E+01	3,95E+01	4,21E+01	3,71E+01	1,58E+01	5,14E-02	1,76E-04	9,60E-09	6,56E-09	1,46E-10
PU240	0,	6,90E+01	5,92E+01	4,13E+01	2,74E+01	5,90E-02	1,63E-03	2,70E-05	5,04E-11	9,67E-11	1,04E-10	4,91E-11
PU241	0,	1,45E+02	1,28E+02	9,56E+01	6,84E+01	1,94E+01	1,03E-04	3,61E-06	1,89E-13	0,	0,	0,
PU242	0,	1,64E+03	1,64E+03	1,64E+03	1,63E+03	1,60E+03	1,50E+03	1,39E+03	9,64E+04	2,69E+04	1,92E-11	0,
PU243	0,	1,00E+0A	1,00E+0A	1,00E+0A	1,00E+0A	1,00E+0A	9,99E-09	9,97E-09	9,89E-09	9,60E-09	6,56E-09	1,46E-10
AM241	0,	4,41E+00	4,12E+01	1,15E+02	7,17E+03	1,94E+03	1,03E-04	3,61E-06	1,99E-13	0,	0,	0,
AM243	0,	1,20E+00	1,05E+00	7,63E-01	5,31E-01	1,36E-01	5,73E-03	1,53E-04	9,89E-09	9,60E-09	6,56E-09	1,46E-10
CM245	0,	1,45E+02	1,28E+02	9,54E+03	6,82E+03	1,94E+03	1,03E-04	3,60E-06	1,88E-13	0,	0,	0,
CM246	0,	2,54E+03	2,04E+03	1,22E+03	6,75E+04	7,44E+05	4,32E-07	1,20E-09	2,44E+20	1,89E+32	0,	0,
CM247	0,	1,00E+0A	1,00E+0A	1,00E+0A	1,00E+0A	1,00E+0A	9,99E-09	9,97E-09	9,89E-09	9,60E-09	6,56E-09	1,46E-10
CM248	0,	2,89E+0A	2,89E+0A	2,87E+0A	2,84E+0A	2,76E+0A	2,58E+0A	2,38E+0A	1,61E+0A	4,05E-09	8,17E-17	0,
SUMTOT	2,56E+01	7,93E+00	3,56E+00	2,46E+00	1,88E+00	8,32E-01	3,51E-01	2,82E-01	3,61E-01	3,48E-01	2,24E-02	4,62E-03
TOTAL	2,56E+01	7,99E+00	3,56E+00	2,46E+00	1,88E+00	8,32E-01	3,51E-01	2,82E-01	3,61E-01	3,48E-01	2,24E-02	4,62E-03

TABLE IIIA

PU WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL - EQUILIBRIUM CYCLE

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	INITIAL	1,YR	2.5YR	6,YR	10,YR	25,YR	60,YR	100,YR	250,YR	600,YR	1000,YR
TL208	0.	2.18E-05	1.02E-08	3.11E-04	8.55E-04	5.00E-04	3.64E-08	2.68E-08	5.85E-05	2.01E-06	4.29E-08
PB210	0.	4.11E-15	1.60E-13	5.1AE-12	3.87E-11	1.35E-09	3.4AE-08	2.07E-07	3.75E-06	4.3CE-05	1.34E-04
PB212	0.	6.07E-05	2.83E-04	8.03E-04	1.20E-03	1.40E-03	1.01E-03	8.88E-04	1.02E-04	5.59E-06	1.19E-07
PB214	0.	5.09E-13	7.93E-12	1.09E-10	5.00E-10	7.5AE-09	9.78E-08	4.20E-07	5.07E-06	4.35E-05	1.34E-04
BI210	0.	4.11E-15	1.60E-13	5.1AE-12	3.87E-11	1.35E-09	3.4AE-08	2.07E-07	3.75E-06	4.35E-05	1.34E-04
BI212	0.	6.07E-05	2.83E-04	8.03E-04	1.20E-03	1.40E-03	1.01E-03	8.88E-04	1.02E-04	5.59E-06	1.19E-07
BI214	0.	5.09E-13	7.93E-12	1.09E-10	5.00E-10	7.58E-09	9.78E-08	4.20E-07	5.07E-06	4.35E-05	1.34E-04
PO210	0.	1.12E-15	7.90E-14	5.72E-12	3.87E-11	1.35E-09	3.40E-08	2.07E-07	3.75E-06	4.35E-05	1.34E-04
PO212	0.	3.AAE-05	1.81E-04	5.52E-04	8.08E-04	8.99E-04	6.47E-04	4.40E-04	1.04E-04	3.5AE-06	7.62E-08
PO214	0.	5.09E-13	7.93E-12	1.09E-10	5.00E-10	7.58E-09	9.78E-08	4.20E-07	5.07E-06	4.35E-05	1.34E-04
PO216	0.	6.07E-05	2.83E-04	8.03E-04	1.20E-03	1.40E-03	1.01E-03	8.88E-04	1.02E-04	5.59E-06	1.19E-07
PO218	0.	5.04E-13	7.93E-12	1.09E-10	5.00E-10	7.5AE-09	9.78E-08	4.20E-07	5.07E-06	4.35E-05	1.34E-04
RN220	0.	6.07E-05	2.83E-04	8.03E-04	1.20E-03	1.40E-03	1.01E-03	8.88E-04	1.02E-04	5.59E-06	1.19E-07
RN222	0.	5.09E-13	7.93E-12	1.09E-10	5.00E-10	7.5AE-09	9.78E-08	4.20E-07	5.07E-06	4.35E-05	1.34E-04
RA224	0.	6.07E-05	2.83E-04	8.03E-04	1.20E-03	1.40E-03	1.01E-03	8.88E-04	1.02E-04	5.59E-06	1.19E-07
RA226	0.	5.04E-13	7.93E-12	1.09E-10	5.00E-10	7.5AE-09	9.78E-08	4.20E-07	5.07E-06	4.35E-05	1.34E-04
TH228	0.	6.07E-05	2.83E-04	8.03E-04	1.20E-03	1.40E-03	1.01E-03	8.88E-04	1.02E-04	5.59E-06	1.19E-07
TH230	0.	3.53E-09	2.20E-08	1.25E-07	3.45E-07	2.07E-06	1.10E-05	2.77E-05	1.27E-04	4.2AE-04	7.AAE-04
TH231	0.	5.54E-08	8.55E-08	2.00E-07	3.34E-07	8.35E-07	2.00E-06	3.33E-06	8.32E-06	1.99E-05	3.29E-05
PA233	0.	3.46E-06	2.07E-05	1.12E-04	2.93E-04	1.4AE-03	5.A0E-03	1.0AE-02	2.79E-02	5.5CE-02	7.20E-02
U232	0.	3.02E-04	7.57E-04	1.25E-03	1.44E-03	1.37E-03	9.A8E-04	6.7CE-04	1.5AE-04	5.44E-06	1.10E-07
U233	0.	5.02E-12	7.67E-11	9.69E-10	4.29E-09	5.75E-08	5.74E-07	1.97E-06	1.40E-05	7.A4E-05	1.8AE-04
U234	0.	8.19E-04	2.02E-03	4.79E-03	7.85E-03	1.45E-02	3.91E-02	5.97E-02	8.94E-02	1.04E-01	1.05E-01
U235	0.	3.34E-08	8.35E-08	2.00E-07	3.34E-07	8.35E-07	2.00E-06	3.33E-06	8.32E-06	1.99E-05	3.29E-05
U236	0.	1.57E-06	3.92E-06	9.39E-06	1.57E-05	3.91E-05	9.37E-05	1.56E-04	3.A7E-04	9.11E-04	1.49E-03
U237	0.	3.14E-01	2.93E-01	2.49E-01	2.00E-01	1.02E-01	1.A8E-02	3.05E-03	2.72E-06	2.07E-13	1.52E-21
NP237	0.	3.46E-06	2.07E-05	1.12E-04	2.93E-04	1.4AE-03	5.00E-03	1.3AE-02	2.79E-02	5.53E-02	7.20E-02
PU236	4.25E-02	3.34E-02	2.32E-02	9.A9E-03	5.74E-03	9.75E-04	1.96E-08	1.17E-12	1.A9E-28	0.	0.
PU238	2.91E+02	2.89E+02	2.85E+02	2.7AE+02	2.69E+02	2.19E+02	1.42E+02	1.34E+02	4.15E+01	2.72E+00	1.21E-01
PU239	3.42E+01	3.42E+01	3.42E+01	3.42E+01	3.42E+01	3.42E+01	3.42E+01	3.41E+01	3.40E+01	3.38E+01	3.35E+01
PU240	5.40E+01	5.40E+01	5.40E+01	5.40E+01	5.40E+01	5.39E+01	5.37E+01	5.35E+01	5.27E+01	5.00E+01	4.69E+01
PU241	1.32E+04	1.24E+04	1.17E+04	9.94E+03	8.24E+03	4.06E+03	7.93E+02	1.22E+02	1.09E-01	8.28E-09	6.08E-17
PU242	1.90E-01	1.90E-01	1.93E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.90E-01	1.89E-01	1.89E-01
AM241	0.	2.06E+01	4.90E+01	1.10E+02	1.67E+02	3.05E+02	3.95E+02	3.93E+02	3.12E+02	1.78E+02	9.40E+01
SUBTOT	1.35E+04	1.30E+04	1.21E+04	1.04E+04	8.77E+03	4.71E+03	1.40E+03	7.36E+02	4.41E+02	2.00E+02	1.77E+02
TOTAL	1.35E+04	1.30E+04	1.21E+04	1.04E+04	8.77E+03	4.71E+03	1.40E+03	7.36E+02	4.41E+02	2.00E+02	1.77E+02

TABLE IIIB

PU WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = EQUILIBRIUM CYCLE

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
TL207	3.49E+07	2.13E+06	1.10E+05	3.01E+05	1.48E+04	5.06E+04	8.21E+04	1.10E+03	1.17E+03	1.10E+03	1.00E+03
TL209	1.40E+07	1.45E+06	9.93E+06	2.67E+05	1.22E+04	3.73E+04	6.22E+04	1.35E+03	1.54E+03	7.84E+04	1.88E+17
PB209	6.36E+06	6.50E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
PB210	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
PB211	3.50E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
PB212	1.19E+07	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
PB214	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
BI210	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
BI211	3.50E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
BI212	1.19E+07	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
BI213	6.36E+06	6.50E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
BI214	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
PO210	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.23E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
PO211	1.05E+09	6.41E+09	3.98E+08	9.07E+08	4.48E+07	1.52E+08	2.47E+08	3.50E+08	3.49E+08	3.49E+08	3.20E+08
PO213	6.22E+06	6.33E+05	4.41E+04	1.19E+03	5.42E+03	1.66E+02	2.77E+02	6.13E+02	6.85E+02	3.49E+03	8.35E+16
PO214	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
PO215	3.50E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
PO216	1.19E+07	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
PO218	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
AT217	6.36E+06	6.50E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
RN219	3.50E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
RN220	1.19E+07	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
RN222	1.34E+04	8.01E+04	3.31E+03	6.54E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
FR221	6.36E+06	6.50E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
FR223	4.90E+09	2.99E+08	1.63E+07	4.23E+07	2.08E+06	7.11E+06	1.15E+07	1.63E+05	1.64E+05	1.63E+05	1.49E+05
RA223	3.56E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
RA224	1.19E+07	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
RA225	6.36E+06	6.50E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
RA226	1.34E+04	8.01E+04	3.31E+03	6.58E+03	1.80E+02	3.91E+02	5.24E+02	5.55E+02	9.30E+03	1.59E+05	1.57E+05
RA228	3.72E+11	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
AC225	6.36E+06	6.50E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
AC227	3.50E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
AC228	3.72E+11	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
TH227	1.45E+07	2.11E+06	1.14E+05	2.98E+05	1.47E+04	5.01E+04	8.12E+04	1.15E+03	1.16E+03	1.15E+03	1.05E+03
TH228	1.19E+07	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
TH229	6.36E+06	6.58E+05	4.51E+04	1.21E+03	5.55E+03	1.70E+02	2.83E+02	6.27E+02	7.01E+02	3.57E+03	8.54E+16
TH230	7.08E+04	2.12E+03	5.10E+03	8.47E+03	1.98E+02	3.88E+02	5.19E+02	5.53E+02	9.30E+03	1.59E+05	1.57E+05
TH231	3.20E+05	8.06E+05	1.44E+04	2.91E+04	9.98E+04	9.82E+04	1.11E+03	1.18E+03	1.17E+03	1.16E+03	1.07E+03
TH232	3.72E+11	2.21E+10	1.14E+09	2.81E+09	1.20E+08	3.77E+08	6.77E+08	2.17E+07	7.33E+07	6.51E+06	2.44E+05
TH234	2.91E+08	7.27E+06	1.74E+07	2.89E+07	7.12E+07	1.80E+08	2.80E+08	6.73E+08	1.34E+05	1.59E+05	1.57E+05
PA231	3.50E+07	2.14E+06	1.10E+05	3.02E+05	1.49E+04	5.08E+04	8.23E+04	1.17E+03	1.17E+03	1.10E+03	1.07E+03
PA233	7.20E+02	6.93E+02	9.09E+02	9.08E+02	9.03E+02	8.93E+02	8.82E+02	8.27E+02	6.59E+02	3.57E+03	7.80E+16
PA234M	2.91E+08	7.27E+06	1.74E+07	2.89E+07	7.12E+07	1.80E+08	2.80E+08	6.73E+08	1.34E+05	1.59E+05	1.57E+05
U233	1.88E+04	7.23E+04	2.06E+03	3.57E+03	8.97E+03	2.02E+02	3.10E+02	6.20E+02	8.99E+02	3.57E+03	8.51E+16
U234	1.05E+01	1.04E+01	1.03E+01	1.02E+01	9.78E+02	8.86E+02	7.92E+02	4.52E+02	6.35E+03	1.59E+05	1.57E+05
U235	3.49E+05	6.98E+05	1.84E+06	2.91E+06	5.98E+06	9.82E+06	1.11E+03	1.18E+03	1.17E+03	1.10E+03	1.07E+03
U236	1.49E+03	3.45E+03	7.02E+03	9.80E+03	1.41E+02	1.52E+02	1.52E+02	1.52E+02	1.48E+02	1.14E+02	8.41E+04
U238	2.91E+08	7.27E+06	1.74E+07	2.89E+07	7.12E+07	1.80E+08	2.80E+08	6.73E+08	1.34E+05	1.59E+05	1.57E+05
NP237	7.20E+02	6.93E+02	9.09E+02	9.08E+02	9.03E+02	8.93E+02	8.82E+02	8.27E+02	6.59E+02	3.57E+03	7.80E+16
PU238	3.33E+01	3.19E+01	2.89E+01	2.58E+01	1.88E+01	9.22E+00	2.30E+00	6.02E+03	1.58E+11	0.	0.
PU239	4.88E+01	4.18E+01	2.92E+01	1.98E+01	4.10E+00	1.15E+01	1.91E+03	2.34E+12	1.91E+16	1.77E+16	8.34E+17
PU240	1.89E+01	1.89E+01	1.88E+01	1.86E+01	1.81E+01	1.70E+01	1.58E+01	1.10E+01	3.35E+02	2.17E+09	0.
SUBTOT	8.25E+01	7.42E+01	5.80E+01	4.57E+01	2.17E+01	7.54E+03	3.22E+03	1.47E+06	9.20E+01	6.38E+02	1.50E+02
TOTAL	1.77E+02	8.27E+01	5.80E+01	4.57E+01	2.17E+01	7.54E+03	3.22E+06	1.47E+06	9.23E+01	6.33E+02	1.50E+02

TABLE IVA

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL - FIRST PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29948.MWD, FLUX= 1.49E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	DISCHARGE	1.YR	2.5 YR	5.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
TL207	0.	1.70E-06	2.83E-06	4.29E-06	7.52E-06	1.09E-05	1.18E-05	3.98E-05	5.54E-05	1.06E-04	2.34E-04	3.67E-04
TL208	0.	1.61E-03	2.53E-03	3.84E-03	6.21E-03	7.47E-03	7.44E-03	5.34E-03	3.83E-03	8.57E-04	2.95E-05	6.52E-07
TL209	0.	1.59E-09	1.74E-09	2.00E-09	2.64E-09	3.40E-09	4.71E-09	1.73E-08	3.49E-08	1.72E-07	1.18E-06	3.74E-06
PB209	0.	7.25E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
PB210	0.	1.57E-09	2.84E-09	5.84E-09	2.00E-08	5.39E-08	4.61E-07	4.45E-06	1.69E-05	1.72E-04	1.49E-03	4.27E-03
PB211	0.	1.77E-06	2.83E-06	4.30E-06	7.54E-06	1.10E-05	1.18E-05	3.99E-05	5.54E-05	1.07E-04	2.34E-04	3.69E-04
PB212	0.	4.48E-03	7.04E-03	1.08E-02	1.73E-02	2.07E-02	2.07E-02	1.48E-02	1.01E-02	2.38E-03	8.20E-05	1.76E-06
PB214	0.	3.32E-08	4.95E-08	8.21E-08	1.98E-07	4.00E-07	4.87E-06	1.03E-05	3.02E-05	2.24E-04	1.49E-03	4.27E-03
BI210	0.	1.57E-09	2.84E-09	5.84E-09	2.01E-08	5.39E-08	4.61E-07	4.45E-06	1.69E-05	1.72E-04	1.49E-03	4.27E-03
BI211	0.	1.77E-06	2.83E-06	4.30E-06	7.54E-06	1.10E-05	1.18E-05	3.99E-05	5.54E-05	1.07E-04	2.34E-04	3.69E-04
BI212	0.	4.48E-03	7.04E-03	1.08E-02	1.73E-02	2.07E-02	2.07E-02	1.48E-02	1.01E-02	2.38E-03	8.20E-05	1.76E-06
BI213	0.	7.25E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
BI214	0.	3.32E-08	4.95E-08	8.21E-08	1.98E-07	4.00E-07	4.87E-06	1.03E-05	3.02E-05	2.24E-04	1.49E-03	4.27E-03
PO210	0.	1.09E-09	2.13E-09	4.63E-09	1.71E-08	5.40E-08	4.61E-07	4.45E-06	1.69E-05	1.72E-04	1.49E-03	4.27E-03
PO211	0.	5.30E-09	8.50E-09	1.29E-08	2.24E-08	3.29E-08	4.55E-08	1.20E-07	1.67E-07	3.20E-07	7.03E-07	1.11E-06
PO212	0.	2.87E-03	4.50E-03	6.90E-03	1.10E-02	1.33E-02	1.32E-02	9.49E-03	6.44E-03	1.52E-03	5.25E-05	1.12E-06
PO213	0.	7.09E-08	7.75E-08	8.91E-08	1.17E-07	1.51E-07	1.99E-07	7.67E-07	1.55E-06	7.65E-06	5.05E-05	1.66E-04
PO214	0.	3.32E-08	4.95E-08	8.21E-08	1.98E-07	4.00E-07	4.87E-06	1.03E-05	3.02E-05	2.24E-04	1.49E-03	4.27E-03
PO215	0.	1.77E-06	2.83E-06	4.30E-06	7.54E-06	1.10E-05	1.18E-05	3.99E-05	5.54E-05	1.07E-04	2.34E-04	3.69E-04
PO216	0.	4.48E-03	7.04E-03	1.08E-02	1.73E-02	2.07E-02	2.07E-02	1.48E-02	1.01E-02	2.38E-03	8.20E-05	1.76E-06
PO218	0.	3.32E-08	4.95E-08	8.21E-08	1.98E-07	4.00E-07	4.87E-06	1.03E-05	3.02E-05	2.24E-04	1.49E-03	4.27E-03
AT217	0.	7.25E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
RN2.9	0.	1.77E-06	2.83E-06	4.30E-06	7.54E-06	1.10E-05	1.18E-05	3.99E-05	5.54E-05	1.07E-04	2.34E-04	3.69E-04
RN220	0.	4.48E-03	7.04E-03	1.08E-02	1.73E-02	2.07E-02	2.07E-02	1.48E-02	1.01E-02	2.38E-03	8.20E-05	1.76E-06
RN222	0.	3.32E-08	4.95E-08	8.21E-08	1.98E-07	4.00E-07	4.87E-06	1.03E-05	3.02E-05	2.24E-04	1.49E-03	4.27E-03
FR221	0.	7.25E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
FR223	0.	2.56E-08	3.96E-08	6.01E-08	1.05E-07	1.53E-07	2.06E-07	5.59E-07	7.78E-07	1.49E-06	3.28E-06	5.16E-06
RA223	0.	1.77E-06	2.83E-06	4.30E-06	7.54E-06	1.10E-05	1.18E-05	3.99E-05	5.54E-05	1.07E-04	2.34E-04	3.69E-04
RA224	0.	4.48E-03	7.04E-03	1.08E-02	1.73E-02	2.07E-02	2.07E-02	1.48E-02	1.01E-02	2.38E-03	8.20E-05	1.76E-06
RA225	0.	7.19E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
RA226	0.	3.32E-08	4.95E-08	8.21E-08	1.98E-07	4.00E-07	4.87E-06	1.03E-05	3.02E-05	2.24E-04	1.49E-03	4.27E-03
RA228	0.	3.92E-12	6.77E-12	1.24E-11	3.10E-11	5.90E-11	1.96E-10	5.61E-10	9.87E-10	2.70E-09	6.57E-09	1.11E-08
AC225	0.	7.25E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
AC227	0.	1.83E-06	2.83E-06	4.29E-06	7.53E-06	1.10E-05	2.18E-05	3.99E-05	5.55E-05	1.07E-04	2.34E-04	3.69E-04
AC228	0.	3.92E-12	6.77E-12	1.24E-11	3.10E-11	5.90E-11	1.96E-10	5.61E-10	9.87E-10	2.70E-09	6.57E-09	1.11E-08
TH227	0.	1.73E-06	2.80E-06	4.24E-06	7.43E-06	1.08E-05	2.15E-05	3.94E-05	5.48E-05	1.05E-04	2.31E-04	3.63E-04
TH228	0.	4.46E-03	7.02E-03	1.08E-02	1.72E-02	2.07E-02	2.07E-02	1.48E-02	1.01E-02	2.38E-03	8.20E-05	1.76E-06
TH229	0.	7.16E-08	7.93E-08	9.11E-08	1.20E-07	1.55E-07	2.05E-07	7.85E-07	1.59E-06	7.82E-06	5.16E-05	1.70E-04
TH230	0.	3.25E-05	4.26E-05	5.80E-05	9.50E-05	1.39E-04	3.20E-04	8.27E-04	1.52E-03	4.77E-03	1.36E-02	2.40E-02
TH231	0.	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.58E-02	1.58E-02	1.58E-02	1.59E-02	1.61E-02
TH232	0.	2.75E-11	3.81E-11	5.39E-11	9.09E-11	1.33E-10	2.92E-10	6.64E-10	1.09E-09	2.70E-09	6.57E-09	1.11E-08
TH234	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01
PA231	0.	3.33E-05	3.37E-05	3.42E-05	3.54E-05	3.67E-05	4.17E-05	5.34E-05	6.64E-05	1.17E-04	2.34E-04	3.68E-04
PA233	0.	3.30E-01	3.30E-01	3.31E-01	3.33E-01	3.36E-01	3.55E-01	4.19E-01	4.97E-01	7.59E-01	1.17E+00	1.43E+00
PA234M	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01
PA234	0.	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04
U232	0.	1.13E-02	1.42E-02	1.72E-02	2.09E-02	2.21E-02	2.02E-02	1.44E-02	9.82E-03	2.32E-03	7.98E-05	1.70E-06
U233	0.	8.02E-05	8.17E-05	8.40E-05	8.90E-05	9.47E-05	1.17E-04	1.74E-04	2.53E-04	6.59E-04	2.13E-03	4.58E-03
U234	1.94E+00	1.16E+00	1.17E+00	1.19E+00	1.24E+00	1.30E+00	1.44E+00	1.85E+00	2.14E+00	2.74E+00	3.00E+00	3.01E+00
U235	5.27E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.58E-02	1.58E-02	1.58E-02	1.59E-02	1.61E-02
U236	3.26E-02	2.15E-01	2.15E-01	2.15E-01	2.15E-01	2.15E-01	2.16E-01	2.16E-01	2.17E-01	2.21E-01	2.28E-01	2.37E-01
U237	0.	4.87E+00	4.52E+00	4.21E+00	3.58E+00	2.97E+00	1.47E+00	2.85E-01	4.39E-02	8.63E-05	4.59E-05	4.44E-05

TABLE IVA (Continued)

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL - FIRST PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29944.MWD, FLUX= 1.49E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	DISCHARGE	1.YR	2.5.YR	6.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
U238	3.22E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01
NP237	0.	3.30E-01	3.30E-01	3.31E-01	3.33E-01	3.36E-01	3.55E-01	4.19E-01	4.47E-01	7.59E-01	1.17E+00	1.43E+00
NP239	0.	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.02E+01	5.01E+01	4.99E+01	4.92E+01	4.77E+01	4.60E+01
PU236	2.42E-01	3.50E-01	2.75E-01	1.91E-01	8.14E-02	3.04E-02	8.02E-04	1.61E-07	9.64E-12	1.39E-27	0.	0.
PU238	2.21E+03	4.82E+03	5.00E+03	5.00E+03	4.87E+03	4.72E+03	4.21E+03	3.21E+03	2.54E+03	7.44E+02	5.28E+01	3.03E+00
PU239	2.86E+02	3.70E+02	3.70E+02	3.70E+02	3.70E+02	3.70E+02	3.69E+02	3.69E+02	3.69E+02	3.67E+02	3.64E+02	3.61E+02
PU240	4.56E+02	7.64E+02	7.65E+02	7.66E+02	7.66E+02	7.70E+02	7.75E+02	7.78E+02	7.77E+02	7.66E+02	7.59E+02	7.09E+02
PU241	1.05E+05	1.89E+05	1.81E+05	1.68E+05	1.43E+05	1.18E+05	5.47E+04	1.14E+04	1.75E+03	3.45E+00	1.84E+00	1.77E+00
PU242	1.59E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00	3.98E+00
PU243	0.	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06
AM241	1.90E+02	4.14E+02	7.13E+02	1.13E+03	1.99E+03	2.81E+03	4.78E+03	6.06E+03	6.00E+03	4.77E+03	2.72E+03	1.44E+03
AM242M	0.	4.58E+01	4.56E+01	4.55E+01	4.46E+01	4.38E+01	4.09E+01	3.49E+01	2.90E+01	1.47E+01	2.97E+00	4.80E-01
AM242	0.	4.58E+01	4.56E+01	4.55E+01	4.46E+01	4.38E+01	4.09E+01	3.49E+01	2.90E+01	1.47E+01	2.97E+00	4.80E-01
AM243	0.	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.03E+01	5.02E+01	5.01E+01	4.99E+01	4.92E+01	4.77E+01	4.60E+01
AM245	0.	6.16E-07	2.75E-07	8.21E-08	4.89E-09	1.94E-10	1.73E-15	6.09E-28	6.05E-42	0.	0.	0.
CM242	0.	5.63E+04	1.19E+04	1.20E+03	4.17E+01	3.60E+01	3.35E+01	2.86E+01	2.54E+01	1.20E+01	2.44E+00	3.91E-01
CM243	0.	1.16E+01	1.13E+01	1.10E+01	1.02E+01	9.51E+00	6.73E+00	3.15E+00	1.53E+00	5.15E-02	2.63E-05	4.55E-09
CM244	0.	8.06E+03	7.76E+03	7.53E+03	6.41E+03	5.50E+03	3.15E+03	8.11E+02	1.75E+02	5.82E-01	8.51E-07	2.63E-13
CM245	0.	1.93E+00	1.93E+00	1.93E+00	1.93E+00	1.92E+00	1.92E+00	1.92E+00	1.91E+00	1.89E+00	1.85E+00	1.77E+00
CM246	0.	4.01E-01	4.01E-01	4.01E-01	4.01E-01	4.00E-01	3.99E-01	3.97E-01	3.95E-01	3.80E-01	3.67E-01	3.44E-01
CM247	0.	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06
CM248	0.	9.28E-06	9.28E-06	9.28E-06	9.28E-06	9.28E-06	9.28E-06	9.28E-06	9.28E-06	9.28E-06	9.27E-06	9.26E-06
BK249	0.	4.11E-02	1.83E-02	5.47E-03	3.26E-04	1.30E-05	7.27E-11	4.06E-23	4.03E-37	0.	0.	0.
CF249	0.	6.71E-05	1.22E-04	1.53E-04	1.65E-04	1.64E-04	1.60E-04	1.49E-04	1.38E-04	1.02E-04	5.14E-05	2.34E-05
CF250	0.	4.81E-04	4.57E-04	4.22E-04	3.50E-04	2.83E-04	1.28E-04	2.00E-05	2.41E-06	8.52E-10	6.71E-13	6.60E-13
CF251	0.	4.63E-06	4.63E-06	4.62E-06	4.61E-06	4.59E-06	4.50E-06	4.42E-06	4.29E-06	3.82E-06	2.92E-06	2.14E-06
CF252	0.	6.34E-04	4.88E-04	3.30E-04	1.32E-04	4.62E-05	9.09E-07	9.50E-11	2.64E-15	2.35E-32	0.	0.
SUBTOT	1.08E+05	2.60E+05	2.07E+05	1.84E+05	1.58E+05	1.33E+05	7.21E+04	2.28E+04	1.16E+04	6.80E+03	4.00E+03	2.62E+03
TOTAL	1.08E+05	2.60E+05	2.07E+05	1.84E+05	1.58E+05	1.33E+05	7.21E+04	2.28E+04	1.16E+04	6.80E+03	4.00E+03	2.62E+03

TABLE IVB

LWR SPENT FUEL, A MIX OF 40% NEW FUEL AND 60% PWR FUEL = FIRST PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29900.MWD, FLUX= 1.49E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
TL207	0.	3.67E-04	8.69E-04	2.04E-03	3.37E-03	8.14E-03	1.70E-02	2.30E-02	2.88E-02	2.89E-02	2.88E-02	2.82E-02
TL208	0.	6.32E-07	1.07E-08	2.88E-08	5.28E-08	1.58E-07	4.26E-07	7.34E-07	2.27E-06	7.59E-06	6.71E-05	2.51E-04
TL209	0.	3.74E-06	3.11E-05	1.97E-04	5.18E-04	2.33E-03	7.10E-03	1.18E-02	2.62E-02	2.93E-02	2.49E-03	3.57E-14
PB209	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
PB210	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
PB211	0.	3.69E-04	8.72E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
PB212	0.	1.76E-06	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
PB214	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
BI210	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
BI211	0.	3.69E-04	8.72E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
BI212	0.	1.76E-06	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
BI213	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
BI214	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
PO210	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
PO211	0.	1.11E-06	2.62E-06	6.14E-06	1.01E-05	2.45E-05	5.11E-05	6.93E-05	8.06E-05	8.69E-05	8.41E-05	7.89E-05
PO212	0.	1.12E-06	1.90E-08	5.12E-08	9.38E-08	2.81E-07	7.57E-07	1.31E-06	4.04E-06	1.35E-05	1.19E-04	4.47E-04
PO213	0.	1.66E-04	1.38E-03	8.74E-03	2.30E-02	1.04E-01	3.16E-01	5.26E-01	1.17E+00	1.30E+00	6.64E-02	1.59E-14
PO214	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
PO215	0.	3.69E-04	8.72E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
PO216	0.	1.76E-06	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
PO218	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
AT217	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
RN219	0.	3.69E-04	8.72E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
RN220	0.	1.76E-06	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
RN222	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
FR221	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
FR223	0.	5.16E-06	1.22E-05	2.86E-05	4.73E-05	1.14E-04	3.59E-04	5.20E-04	4.04E-04	4.05E-04	4.02E-04	3.88E-04
RA223	0.	3.69E-04	8.72E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
RA224	0.	1.76E-06	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
RA225	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
RA226	0.	4.27E-03	2.39E-02	9.66E-02	1.91E-01	5.21E-01	1.14E+00	1.54E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
RA228	0.	1.11E-08	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
AC225	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
AC227	0.	3.69E-04	8.72E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
AC228	0.	1.11E-08	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
TH227	0.	3.63E-04	8.60E-04	2.02E-03	3.33E-03	8.05E-03	1.68E-02	2.28E-02	2.85E-02	2.85E-02	2.83E-02	2.79E-02
TH228	0.	1.76E-06	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
TH229	0.	1.70E-04	1.41E-03	8.94E-03	2.36E-02	1.06E-01	3.23E-01	5.36E-01	1.19E+00	1.33E+00	6.79E-02	1.62E-14
TH230	0.	2.40E-02	6.25E-02	1.50E-01	2.46E-01	5.68E-01	1.13E+00	1.52E+00	1.72E+00	5.56E-01	3.14E-01	3.10E-01
TH231	0.	1.61E-02	1.66E-02	1.77E-02	1.89E-02	2.24E-02	2.65E-02	2.82E-02	2.90E-02	2.90E-02	2.87E-02	2.83E-02
TH232	0.	1.11E-08	2.97E-08	8.00E-08	1.47E-07	4.39E-07	1.18E-06	2.04E-06	6.31E-06	2.11E-05	1.86E-04	6.98E-04
TH234	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.15E-01	3.15E-01	3.15E-01	3.14E-01	3.10E-01
PA231	0.	3.68E-04	8.71E-04	2.05E-03	3.38E-03	8.16E-03	1.70E-02	2.31E-02	2.89E-02	2.90E-02	2.87E-02	2.83E-02
PA233	0.	1.83E+00	1.70E+00	1.72E+00	1.72E+00	1.72E+00	1.70E+00	1.68E+00	1.57E+00	1.25E+00	6.79E-02	1.50E-14
PA234M	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.15E-01	3.15E-01	3.15E-01	3.14E-01	3.10E-01
PA234	0.	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.15E-04	3.15E-04	3.15E-04	3.14E-04	3.10E-04
U233	0.	4.38E-03	1.47E-02	4.00E-02	6.86E-02	1.71E-01	3.65E-01	5.90E-01	1.18E+00	1.33E+00	6.79E-02	1.62E-14
U234	1.98E+00	3.01E+00	3.00E+00	2.98E+00	2.95E+00	2.84E+00	2.60E+00	2.36E+00	1.48E+00	4.78E-01	3.14E-01	3.10E-01
U235	5.27E-02	1.61E-02	1.66E-02	1.77E-02	1.89E-02	2.24E-02	2.65E-02	2.82E-02	2.90E-02	2.90E-02	2.87E-02	2.83E-02
U236	3.26E-02	2.57E-01	2.65E-01	3.17E-01	3.57E-01	4.29E-01	4.36E-01	4.36E-01	4.33E-01	4.25E-01	3.27E-01	2.41E-02
U237	0.	4.44E-05	9.91E-05	2.92E-05	2.09E-05	5.93E-06	3.15E-07	1.10E-08	5.74E-16	0.	0.	0.
U238	3.22E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.15E-01	3.15E-01	3.15E-01	3.14E-01	3.10E-01

TABLE IVB (Continued)

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL - FIRST PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29984.MWD, FLUX= 1.49E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
U240	0.	7.11E-11	1.77E-10	4.24E-10	7.04E-10	1.74E-09	4.02E-09	6.45E-09	1.61E-08	3.09E-08	3.14E-08	1.57E-08
NP237	0.	1.43E+00	1.70E+00	1.72E+00	1.72E+00	1.72E+00	1.70E+00	1.68E+00	1.57E+00	1.25E+00	6.79E-02	1.90E-14
NP239	0.	4.60E+01	4.01E+01	2.92E+01	2.03E+01	5.23E+00	2.19E-01	5.86E-03	2.12E-06	2.05E-06	1.40E-06	3.13E-08
NP240M	0.	7.11E-11	1.77E-10	4.24E-10	7.04E-10	1.74E-09	4.02E-09	6.45E-09	1.61E-08	3.09E-08	3.14E-08	1.57E-08
PU239	2.88E+02	3.61E+02	3.47E+02	3.18E+02	2.88E+02	1.91E+02	7.13E+01	2.29E+01	7.83E-02	2.05E-06	1.40E-06	3.13E-08
PU240	4.56E+02	7.09E+02	6.04E+02	4.25E+02	2.82E+02	6.05E+01	1.67E+00	2.77E-02	1.61E-08	3.10E-08	3.14E-08	1.57E-08
PU241	1.05E+05	1.77E+00	1.57E+00	1.17E+00	8.34E-01	2.37E-01	1.26E-02	4.41E-04	2.30E-11	0.	0.	0.
PU242	1.59E+00	3.98E+00	3.97E+00	3.95E+00	3.92E+00	3.81E+00	3.54E+00	3.32E+00	2.31E+00	6.41E-01	6.57E-08	0.
PU243	0.	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.13E-06	2.12E-06	2.05E-06	1.40E-06	3.13E-08
PU244	0.	7.12E-11	1.78E-10	4.25E-10	7.05E-10	1.74E-09	4.03E-09	6.46E-09	1.61E-08	3.10E-08	3.14E-08	1.57E-08
AM241	1.90E+02	1.44E+03	1.32E+02	1.70E+00	8.76E-01	2.37E-01	1.26E-02	4.41E-04	2.42E-11	0.	0.	0.
AM243	0.	4.60E+01	4.01E+01	2.92E+01	2.03E+01	5.23E+00	2.19E-01	5.86E-03	2.12E-06	2.05E-06	1.40E-06	3.13E-08
CM245	0.	1.77E+00	1.56E+00	1.16E+00	8.33E-01	2.37E-01	1.26E-02	4.40E-04	2.29E-11	0.	0.	0.
CM246	0.	3.46E-01	2.78E-01	1.66E-01	9.21E-02	1.01E-02	5.89E-05	1.64E-07	6.06E-18	4.72E-30	0.	0.
CM247	0.	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.14E-06	2.13E-06	2.12E-06	2.05E-06	1.40E-06	3.13E-08
CM248	0.	9.20E-06	9.20E-06	9.17E-06	9.10E-06	8.84E-06	8.25E-06	7.62E-06	5.14E-06	1.30E-06	2.62E-14	0.
SUBTOT	1.06E+05	2.61E+03	1.18E+03	8.18E+02	6.25E+02	2.80E+02	9.90E+01	5.39E+01	3.67E+01	2.29E+01	5.79E+00	4.66E+00
TOTAL	1.06E+05	2.62E+03	1.19E+03	8.18E+02	6.25E+02	2.80E+02	9.90E+01	5.39E+01	3.67E+01	2.29E+01	5.79E+00	4.66E+00

TABLE VA

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = FIRST PLUTONIUM RECYCLE

POWER= 2.07MW, BURNUP= 2809.MWD, FLUX= 1.40E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	SEPARATION	1.0E+00YR	2.5E+00YR	6.0E+00YR	1.0E+01YR	2.5E+01YR	6.0E+01YR	1.0E+02YR	2.5E+02YR	6.0E+02YR	1.0E+03YR
TL207	0.	1.65E-07	2.65E-07	3.99E-07	6.88E-07	9.82E-07	1.80E-06	2.70E-06	3.02E-06	3.17E-06	3.27E-06	3.37E-06
TL208	0.	1.51E-04	1.07E-04	6.42E-05	2.28E-05	1.10E-05	7.00E-06	5.01E-06	3.41E-06	8.04E-07	2.77E-08	5.95E-10
TL209	0.	1.50E-10	1.48E-10	1.49E-10	1.54E-10	1.64E-10	2.40E-10	6.62E-10	1.57E-09	9.08E-09	5.28E-08	1.49E-07
PB209	0.	6.80E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
PB210	0.	1.47E-10	2.65E-10	5.14E-10	1.42E-09	2.96E-09	1.27E-08	5.37E-08	1.28E-07	7.91E-07	6.43E-06	1.89E-05
PB211	0.	1.66E-07	2.65E-07	4.00E-07	6.90E-07	9.85E-07	1.81E-06	2.71E-06	3.03E-06	3.18E-06	3.28E-06	3.38E-06
PB212	0.	4.20E-04	2.96E-04	1.78E-04	6.34E-05	3.05E-05	1.94E-05	1.39E-05	9.47E-06	2.23E-06	7.69E-08	1.65E-09
PB214	0.	3.12E-09	4.44E-09	6.43E-09	1.11E-08	1.65E-08	3.80E-08	9.88E-08	1.97E-07	1.00E-06	6.43E-06	1.89E-05
BI210	0.	1.47E-10	2.65E-10	5.14E-10	1.42E-09	2.96E-09	1.27E-08	5.37E-08	1.28E-07	7.91E-07	6.43E-06	1.89E-05
BI211	0.	1.66E-07	2.65E-07	4.00E-07	6.90E-07	9.85E-07	1.81E-06	2.71E-06	3.03E-06	3.18E-06	3.28E-06	3.38E-06
BI212	0.	4.20E-04	2.96E-04	1.78E-04	6.34E-05	3.05E-05	1.94E-05	1.39E-05	9.47E-06	2.23E-06	7.69E-08	1.65E-09
BI213	0.	6.80E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
BI214	0.	3.12E-09	4.44E-09	6.43E-09	1.11E-08	1.65E-08	3.80E-08	9.88E-08	1.97E-07	1.00E-06	6.43E-06	1.89E-05
PO210	0.	1.03E-10	1.99E-10	4.15E-10	1.25E-09	2.96E-09	1.27E-08	5.37E-08	1.28E-07	7.91E-07	6.43E-06	1.89E-05
PO211	0.	4.97E-10	7.96E-10	1.20E-09	2.07E-09	2.95E-09	5.42E-09	8.12E-09	9.08E-09	9.54E-09	9.54E-09	1.01E-08
PO212	0.	2.69E-04	1.90E-04	1.14E-04	4.06E-03	1.95E-05	1.24E-05	8.90E-06	6.06E-06	1.43E-06	4.92E-08	1.06E-09
PO213	0.	6.65E-09	6.58E-09	6.63E-09	6.85E-09	7.28E-09	1.07E-08	2.94E-08	6.97E-08	4.04E-07	2.35E-06	6.63E-06
PO214	0.	3.12E-09	4.44E-09	6.43E-09	1.11E-08	1.65E-08	3.80E-08	9.88E-08	1.97E-07	1.00E-06	6.43E-06	1.89E-05
PO215	0.	1.66E-07	2.65E-07	4.00E-07	6.90E-07	9.85E-07	1.81E-06	2.71E-06	3.03E-06	3.18E-06	3.28E-06	3.38E-06
PO216	0.	4.20E-04	2.96E-04	1.78E-04	6.34E-05	3.05E-05	1.94E-05	1.39E-05	9.47E-06	2.23E-06	7.69E-08	1.65E-09
PO218	0.	3.12E-09	4.44E-09	6.43E-09	1.11E-08	1.65E-08	3.80E-08	9.88E-08	1.97E-07	1.00E-06	6.43E-06	1.89E-05
AT217	0.	6.80E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
RN219	0.	1.66E-07	2.65E-07	4.00E-07	6.90E-07	9.85E-07	1.81E-06	2.71E-06	3.03E-06	3.18E-06	3.28E-06	3.38E-06
RN220	0.	4.20E-04	2.96E-04	1.78E-04	6.34E-05	3.05E-05	1.94E-05	1.39E-05	9.47E-06	2.23E-06	7.69E-08	1.65E-09
RN222	0.	3.12E-09	4.44E-09	6.43E-09	1.11E-08	1.65E-08	3.80E-08	9.88E-08	1.97E-07	1.00E-06	6.43E-06	1.89E-05
FR221	0.	6.80E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
FR223	0.	2.40E-09	3.71E-09	5.59E-09	9.65E-09	1.38E-08	2.53E-08	5.79E-08	8.24E-08	4.45E-08	4.59E-08	4.73E-08
RA223	0.	1.66E-07	2.65E-07	4.00E-07	6.90E-07	9.85E-07	1.81E-06	2.71E-06	3.03E-06	3.18E-06	3.28E-06	3.38E-06
RA224	0.	4.20E-04	2.96E-04	1.78E-04	6.34E-05	3.05E-05	1.94E-05	1.39E-05	9.47E-06	2.23E-06	7.69E-08	1.65E-09
RA225	0.	6.74E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
RA226	0.	3.12E-09	4.44E-09	6.43E-09	1.11E-08	1.65E-08	3.80E-08	9.88E-08	1.97E-07	1.00E-06	6.43E-06	1.89E-05
AC225	0.	6.80E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
AC227	0.	1.72E-07	2.65E-07	4.00E-07	6.89E-07	9.83E-07	1.80E-06	2.70E-06	3.03E-06	3.18E-06	3.28E-06	3.38E-06
TH227	0.	1.63E-07	2.62E-07	3.95E-07	6.81E-07	9.71E-07	1.78E-06	2.67E-06	2.98E-06	3.14E-06	3.23E-06	3.33E-06
TH228	0.	4.19E-04	2.95E-04	1.77E-04	6.32E-05	3.05E-05	1.94E-05	1.39E-05	9.47E-06	2.23E-06	7.69E-08	1.65E-09
TH229	0.	6.72E-09	6.73E-09	6.78E-09	7.00E-09	7.44E-09	1.09E-08	3.01E-08	7.13E-08	4.13E-07	2.40E-06	6.78E-06
TH230	0.	3.05E-06	3.06E-06	3.07E-06	3.12E-06	3.18E-06	3.50E-06	4.78E-06	6.99E-06	1.97E-05	5.94E-05	1.09E-04
TH231	0.	1.48E-03	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.50E-05	1.52E-05
TH234	0.	2.95E-02	2.96E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04
PA231	0.	3.13E-06	3.13E-06	3.13E-06	3.13E-06	3.13E-06	3.13E-06	3.14E-06	3.15E-06	3.19E-06	3.28E-06	3.38E-06
PA233	0.	3.09E-02	3.10E-02	3.10E-02	3.11E-02	3.11E-02	3.13E-02	3.18E-02	3.23E-02	3.40E-02	3.66E-02	3.83E-02
PA234M	0.	2.95E-02	2.96E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04
PA234	0.	2.95E-05	2.96E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07
U232	0.	1.06E-05	1.33E-05	1.62E-05	1.96E-05	2.07E-05	1.89E-05	1.35E-05	9.21E-06	2.17E-06	7.49E-08	1.59E-09
U233	0.	7.52E-08	2.22E-07	4.35E-07	9.00E-07	1.43E-06	1.43E-06	8.16E-06	1.36E-05	3.49E-05	8.78E-05	1.52E-04
U234	1.82E-01	1.09E-03	1.14E-03	1.20E-03	1.55E-03	1.88E-03	3.05E-03	5.33E-03	7.36E-03	1.10E-02	1.40E-02	1.41E-02
U235	4.94E-03	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.48E-05	1.50E-05	1.52E-05
U236	3.06E-03	2.02E-04	2.02E-04	2.02E-04	2.02E-04	2.02E-04	2.03E-04	2.05E-04	2.08E-04	2.20E-04	2.47E-04	2.70E-04
U237	0.	4.57E-03	4.24E-03	3.95E-03	3.36E-03	2.78E-03	1.38E-03	2.72E-04	4.56E-05	4.47E-06	4.31E-06	4.16E-06
U238	3.02E-02	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04
NP237	0.	3.10E-02	3.10E-02	3.10E-02	3.11E-02	3.11E-02	3.13E-02	3.18E-02	3.23E-02	3.40E-02	3.66E-02	3.83E-02
NP239	0.	4.72E+00	4.72E+00	4.72E+00	4.72E+00	4.72E+00	4.71E+00	4.70E+00	4.68E+00	4.62E+00	4.47E+00	4.31E+00

TABLE VA (Continued)

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = FIRST PLUTONIUM RECYCLE

POWER= 2.07MW, BURNUP= 2809.MWD, FLUX= 1.40E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	SEPARATION	1.0E+00YR	2.5E+00YR	6.0E+00YR	1.0E+01YR	2.5E+01YR	6.0E+01YR	1.0E+02YR	2.5E+02YR	6.0E+02YR	1.0E+03YR
PU236	2.27E-02	3.28E-04	2.58E-04	1.79E-04	7.64E-05	2.89E-05	7.52E-07	1.52E-10	9.08E-15	1.31E-30	0.	0.
PU238	2.08E+02	4.52E+00	2.53E+01	3.80E+01	2.99E+01	2.90E+01	2.62E+01	2.06E+01	1.58E+01	5.95E+00	7.63E-01	9.09E-02
PU239	2.68E+01	3.47E+01	3.47E+01	3.47E+01	3.48E+01	3.48E+01	3.51E+01	3.55E+01	3.60E+01	3.79E+01	4.20E+01	4.65E+01
PU240	4.28E+01	7.17E+01	7.93E+01	9.01E+01	1.13E+00	1.36E+00	1.96E+00	2.53E+00	2.68E+00	2.68E+00	2.58E+00	2.48E+00
PU241	9.84E+03	1.78E+02	1.69E+02	1.58E+02	1.34E+02	1.11E+02	5.52E+01	1.09E+01	1.82E+00	1.79E-01	1.72E-01	1.67E-01
PU242	1.50E+01	3.74E-03	3.74E-03	3.74E-03	3.75E-03	3.75E-03	3.77E-03	3.81E-03	3.86E-03	3.96E-03	4.06E-03	4.18E-03
PU243	0.	2.01E-09	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07
AM241	1.78E+01	3.92E+01	3.94E+01	3.97E+01	4.03E+01	4.08E+01	4.18E+01	4.09E+01	3.87E+01	3.05E+01	1.75E+01	9.31E+00
AM242M	0.	4.30E+00	4.28E+00	4.25E+00	4.18E+00	4.11E+00	3.84E+00	3.27E+00	2.72E+00	1.58E+00	2.79E-01	4.58E-02
AM242	0.	4.30E+00	4.28E+00	4.25E+00	4.18E+00	4.11E+00	3.84E+00	3.27E+00	2.72E+00	1.58E+00	2.79E-01	4.58E-02
AM243	0.	4.72E+00	4.72E+00	4.72E+00	4.72E+00	4.72E+00	4.71E+00	4.70E+00	4.68E+00	4.62E+00	4.47E+00	4.31E+00
AM245	0.	5.74E-08	2.58E-08	7.70E-09	4.59E-10	1.82E-11	1.02E-16	5.71E-29	5.67E-43	0.	0.	0.
CM242	0.	5.28E+03	1.12E+03	1.12E+02	3.91E+00	3.38E+00	3.15E+00	2.68E+00	2.23E+00	1.13E+00	2.29E-01	3.69E-02
CM243	0.	1.08E+00	1.06E+00	1.03E+00	9.52E-01	8.73E-01	6.31E-01	2.96E-01	1.24E-01	4.83E-03	2.47E-06	4.27E-10
CM244	0.	7.57E+02	7.28E+02	6.87E+02	6.01E+02	5.10E+02	2.90E+02	7.61E+01	1.64E+01	5.27E-02	7.98E-08	2.65E-14
CM245	0.	1.81E-01	1.81E-01	1.81E-01	1.81E-01	1.81E-01	1.80E-01	1.60E-01	1.79E-01	1.77E-01	1.72E-01	1.64E-01
CM246	0.	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.76E-02	3.75E-02	3.73E-02	3.71E-02	3.63E-02	3.44E-02	3.25E-02
CM247	0.	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07
CM248	0.	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.71E-07	8.70E-07	8.69E-07
BK249	0.	3.85E-03	1.72E-03	5.13E-04	3.06E-05	1.22E-06	6.82E-12	3.81E-24	3.78E-38	0.	0.	0.
CF249	0.	6.30E-06	1.15E-05	1.44E-05	1.55E-05	1.54E-05	1.50E-05	1.40E-05	1.29E-05	9.61E-06	4.83E-06	2.20E-06
CF250	0.	4.52E-05	4.28E-05	3.96E-05	3.29E-05	2.66E-05	1.20E-05	1.88E-06	2.24E-07	6.00E-11	6.29E-14	6.19E-14
CF251	0.	4.34E-07	4.34E-07	4.34E-07	4.32E-07	4.31E-07	4.20E-07	4.15E-07	4.02E-07	3.58E-07	2.74E-07	2.01E-07
CF252	0.	5.95E-05	4.58E-05	3.09E-05	1.24E-05	4.34E-06	8.53E-08	8.91E-12	2.51E-16	2.18E-33	0.	0.
SUBTOT	1.01E+04	6.28E+03	2.10E+03	1.05E+03	8.30E+02	7.21E+02	4.37E+02	1.71E+02	9.33E+01	5.32E+01	3.15E+01	2.10E+01
TOTAL	1.01E+04	6.28E+03	2.10E+03	1.05E+03	8.30E+02	7.21E+02	4.37E+02	1.71E+02	9.33E+01	5.32E+01	3.15E+01	2.10E+01

TABLE VB

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = FIRST PLUTONIUM RECYCLE

POWER= 2.07MW, BURNUP= 2809.MWD, FLUX= 1.40E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	1.0E+00KYR	2.5E+00KYR	6.0E+00KYR	1.0E+01KYR	2.5E+01KYR	6.0E+01KYR	1.0E+02KYR	3.0E+02KYR	1.0E+03KYR	1.0E+04KYR	1.0E+05KYR
TL207	0.	3.37E-06	3.75E-06	4.71E-06	5.98E-06	1.26E-05	3.38E-05	5.39E-05	7.69E-05	7.73E-05	7.66E-05	7.02E-05
TL208	0.	5.95E-10	1.38E-11	4.31E-11	8.78E-11	3.09E-10	9.04E-10	1.59E-09	5.03E-09	1.49E-08	1.50E-07	5.42E-07
TL209	0.	1.49E-07	9.47E-07	5.13E-06	1.29E-05	5.58E-05	1.68E-04	2.80E-04	6.19E-04	6.91E-04	3.53E-05	6.42E-18
PB209	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
PB210	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
PB211	0.	3.38E-06	3.76E-06	4.73E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
PB212	0.	1.65E-09	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
PB214	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
BI210	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
BI211	0.	3.38E-06	3.76E-06	4.73E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
BI212	0.	1.65E-09	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
BI213	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
BI214	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
PO210	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
PO211	0.	1.01E-08	1.13E-08	1.42E-08	1.80E-08	3.80E-08	1.02E-07	1.62E-07	2.61E-07	2.33E-07	2.31E-07	2.11E-07
PO212	0.	1.06E-09	2.46E-11	7.66E-11	1.56E-10	5.50E-10	1.61E-09	2.83E-09	8.95E-09	3.01E-08	2.67E-07	9.58E-07
PO213	0.	6.63E-06	4.21E-05	2.28E-04	5.74E-04	2.48E-03	7.48E-03	1.24E-02	2.75E-02	3.07E-02	1.57E-03	3.74E-18
PO214	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
PO215	0.	3.38E-06	3.76E-06	4.73E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
PO216	0.	1.65E-09	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
PO218	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
AT217	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
RN219	0.	3.38E-06	3.76E-06	4.73E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
RN220	0.	1.65E-09	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
RN222	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
FR221	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
FR223	0.	6.73E-08	5.27E-08	6.62E-08	8.40E-08	1.78E-07	4.78E-07	7.57E-07	1.08E-06	1.09E-06	1.08E-06	9.86E-07
RA223	0.	3.38E-06	3.76E-06	4.73E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
RA224	0.	1.65E-09	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
RA225	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
RA226	0.	1.89E-05	1.11E-04	4.56E-04	9.06E-04	2.48E-03	5.39E-03	7.24E-03	7.76E-03	1.56E-03	2.95E-04	2.91E-04
RA228	0.	1.43E-11	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
AC225	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
AC227	0.	3.38E-06	3.76E-06	4.73E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
AC228	0.	1.43E-11	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
TH227	0.	3.33E-06	3.71E-06	4.66E-06	5.92E-06	1.25E-05	3.34E-05	5.33E-05	7.60E-05	7.65E-05	7.58E-05	6.94E-05
TH228	0.	1.65E-09	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
TH229	0.	6.78E-06	4.30E-05	2.33E-04	5.87E-04	2.54E-03	7.64E-03	1.27E-02	2.81E-02	3.14E-02	1.60E-03	3.83E-18
TH230	0.	1.09E-04	2.93E-04	7.10E-04	1.17E-03	2.78E-03	5.35E-03	7.17E-03	7.73E-03	1.56E-03	2.95E-04	2.91E-04
TH231	0.	1.52E-05	1.59E-05	1.85E-05	2.22E-05	3.77E-05	6.20E-05	7.20E-05	7.76E-05	7.75E-05	7.69E-05	7.04E-05
TH232	0.	1.43E-11	3.84E-11	1.20E-10	2.44E-10	8.59E-10	2.51E-09	4.43E-09	1.40E-08	4.70E-08	4.17E-07	1.50E-06
TH234	0.	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.91E-04
PA231	0.	3.38E-06	3.76E-06	4.72E-06	6.00E-06	1.27E-05	3.39E-05	5.40E-05	7.71E-05	7.75E-05	7.69E-05	7.04E-05
PA233	0.	3.83E-02	4.00E-02	4.03E-02	4.04E-02	4.04E-02	4.01E-02	3.95E-02	3.71E-02	2.95E-02	1.60E-03	3.53E-18
PA234M	0.	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.91E-04
PA234	0.	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.95E-07	2.91E-07
U233	0.	1.52E-04	4.03E-04	9.95E-04	1.66E-03	4.07E-03	9.10E-03	1.39E-02	2.78E-02	3.14E-02	1.60E-03	3.82E-18
U234	1.82E-01	1.43E-02	1.43E-02	1.42E-02	1.40E-02	1.35E-02	1.22E-02	1.10E-02	8.19E-03	1.15E-03	2.95E-04	2.91E-04
U235	4.98E-03	1.52E-05	1.59E-05	1.85E-05	2.22E-05	3.77E-05	6.20E-05	7.20E-05	7.76E-05	7.75E-05	7.69E-05	7.04E-05
U236	3.06E-03	2.76E-04	3.76E-04	5.57E-04	8.98E-04	9.17E-04	9.76E-04	9.75E-04	9.69E-04	9.50E-04	7.32E-04	5.38E-05
U237	0.	4.14E-06	3.67E-06	2.74E-06	1.98E-06	5.57E-07	2.98E-08	1.03E-09	5.19E-17	0.	0.	0.
U238	3.02E-02	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.95E-04	2.91E-04

TABLE VB (Continued)

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = FIRST PLUTONIUM RECYCLE

POWER= 2.07MW, BURNUP= 2869.MWD, FLUX= 1.40E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	1.0E+00KYR	2.5E+00KYR	5.0E+00KYR	1.0E+01KYR	2.5E+01KYR	5.0E+01KYR	1.0E+02KYR	3.0E+02KYR	1.0E+03KYR	1.0E+04KYR	1.0E+05KYR
U240	0.	6.67E-12	1.66E-11	3.98E-11	6.61E-11	1.63E-10	3.78E-10	6.06E-10	1.51E-09	2.90E-09	3.13E-09	1.47E-09
NP237	0.	3.83E-02	4.08E-02	4.03E-02	4.04E-02	4.04E-02	4.01E-02	3.95E-02	3.71E-02	2.95E-02	1.40E-03	3.53E-10
NP239	0.	4.31E+00	3.77E+00	2.74E+00	1.91E+00	4.91E-01	2.06E-02	5.50E-04	1.99E-07	1.93E-07	1.32E-07	2.94E-09
NP240M	0.	6.67E-12	1.66E-11	3.98E-11	6.61E-11	1.63E-10	3.78E-10	6.06E-10	1.51E-09	2.90E-09	3.13E-09	1.47E-09
PU239	2.68E+01	4.65E-01	6.14E-01	8.60E-01	1.01E+00	1.01E+00	4.46E-01	1.00E-01	5.00E-04	1.93E-07	1.32E-07	2.94E-09
PU240	4.28E+01	2.48E+00	2.13E+00	1.49E+00	9.86E-01	2.12E-01	5.86E-03	9.70E-05	1.51E-09	2.90E-09	3.14E-09	1.48E-09
PU241	9.84E+03	1.67E-01	1.47E-01	1.09E-01	7.83E-02	2.23E-02	1.19E-03	4.13E-05	2.16E-12	0.	0.	0.
PU242	1.50E-01	4.10E-03	4.17E-03	4.28E-03	4.33E-03	4.31E-03	4.05E-03	3.77E-03	2.81E-03	7.20E-04	5.14E-11	0.
PU243	0.	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.00E-07	1.99E-07	1.93E-07	1.32E-07	2.94E-09
PU244	0.	6.66E-12	1.67E-11	3.99E-11	6.62E-11	1.63E-10	3.78E-10	6.06E-10	1.51E-09	2.90E-09	3.14E-09	1.48E-09
AM241	1.78E+01	9.31E+00	9.82E+00	1.18E+01	8.21E+02	2.23E+02	1.19E+03	4.13E+05	2.27E-12	0.	0.	0.
AM243	0.	4.31E+00	3.77E+00	2.74E+00	1.91E+00	4.91E-01	2.06E-02	5.50E-04	1.99E-07	1.93E-07	1.32E-07	2.94E-09
CM245	0.	1.66E-01	1.67E-01	1.09E-01	7.82E-02	2.22E-02	1.19E-03	4.13E-05	2.15E-12	0.	0.	0.
CM246	0.	3.25E-02	2.60E-02	1.50E-02	8.64E-03	9.51E-04	5.52E-06	1.50E-08	5.70E-19	4.43E-31	0.	0.
CM247	0.	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.01E-07	2.00E-07	1.99E-07	1.93E-07	1.32E-07	2.94E-09
CM248	0.	8.69E-07	8.67E-07	8.61E-07	8.54E-07	8.29E-07	7.74E-07	7.15E-07	4.83E-07	1.22E-07	2.45E-15	0.
SUBTOT	9.92E+03	2.13E+01	1.17E+01	8.29E+00	6.18E+00	2.42E+00	7.20E+01	4.32E+01	4.17E+01	3.07E+01	2.33E-02	4.92E-03
TOTAL	1.01E+04	2.16E+01	1.17E+01	8.29E+00	6.18E+00	2.42E+00	7.20E+01	4.32E+01	4.17E+01	3.07E+01	2.33E-02	4.92E-03

TABLE VIA

PU WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL + FIRST PLUTONIUM RECYCLE

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	INITIAL	1.YR	2.5YR	5.YR	10.YR	25.YR	50.YR	100.YR	250.YR	500.YR	1000.YR
TL208	0.	1.47E-05	0.67E-05	2.10E-04	3.07E-04	3.61E-04	2.45E-04	1.67E-04	3.94E-05	1.36E-06	2.89E-08
PB210	0.	5.36E-15	2.39E-13	6.75E-12	5.05E-11	1.78E-09	6.53E-08	2.70E-07	6.88E-06	5.67E-05	1.75E-04
PB212	0.	4.09E-05	1.91E-04	5.82E-04	8.52E-04	9.47E-04	6.82E-04	4.64E-04	1.09E-04	3.77E-06	8.03E-08
PB214	0.	6.64E-13	1.05E-11	1.42E-10	8.52E-10	9.88E-09	1.27E-07	5.47E-07	6.81E-06	5.67E-05	1.75E-04
BI210	0.	5.36E-15	2.00E-13	6.75E-12	5.05E-11	1.78E-09	6.53E-08	2.70E-07	6.88E-06	5.67E-05	1.75E-04
BI212	0.	4.09E-05	1.91E-04	5.82E-04	8.52E-04	9.47E-04	6.82E-04	4.64E-04	1.09E-04	3.77E-06	8.03E-08
HI214	0.	6.64E-13	1.05E-11	1.42E-10	8.52E-10	9.88E-09	1.27E-07	5.47E-07	6.81E-06	5.67E-05	1.75E-04
PO210	0.	1.47E-15	1.04E-13	6.84E-12	5.05E-11	1.78E-09	6.53E-08	2.70E-07	6.88E-06	5.67E-05	1.75E-04
PO212	0.	2.02E-05	1.22E-04	3.73E-04	5.45E-04	6.06E-04	4.36E-04	2.97E-04	7.01E-05	2.41E-06	5.14E-08
PO214	0.	6.64E-13	1.05E-11	1.42E-10	8.52E-10	9.88E-09	1.27E-07	5.47E-07	6.81E-06	5.67E-05	1.75E-04
PO216	0.	4.09E-05	1.91E-04	5.82E-04	8.52E-04	9.47E-04	6.82E-04	4.64E-04	1.09E-04	3.77E-06	8.03E-08
PO218	0.	6.64E-13	1.05E-11	1.42E-10	8.52E-10	9.88E-09	1.27E-07	5.47E-07	6.81E-06	5.67E-05	1.75E-04
RN220	0.	4.09E-05	1.91E-04	5.82E-04	8.52E-04	9.47E-04	6.82E-04	4.64E-04	1.09E-04	3.77E-06	8.03E-08
RN222	0.	6.64E-13	1.05E-11	1.42E-10	8.52E-10	9.88E-09	1.27E-07	5.47E-07	6.81E-06	5.67E-05	1.75E-04
RA224	0.	4.09E-05	1.91E-04	5.82E-04	8.52E-04	9.47E-04	6.82E-04	4.64E-04	1.09E-04	3.77E-06	8.03E-08
RA226	0.	6.64E-13	1.05E-11	1.42E-10	8.52E-10	9.88E-09	1.27E-07	5.47E-07	6.81E-06	5.67E-05	1.75E-04
TH228	0.	4.09E-05	1.91E-04	5.82E-04	8.51E-04	9.47E-04	6.82E-04	4.64E-04	1.09E-04	3.77E-06	8.03E-08
TH230	0.	4.59E-09	2.84E-08	1.03E-07	6.49E-07	2.70E-06	1.43E-05	3.81E-05	1.45E-04	5.54E-04	1.03E-03
TH231	0.	2.84E-04	7.11E-04	1.71E-03	2.84E-03	7.11E-03	1.70E-02	2.84E-02	7.09E-02	1.69E-01	2.80E-01
PA233	0.	3.92E-06	2.34E-05	1.27E-04	3.32E-04	1.67E-03	6.34E-03	1.22E-02	3.13E-02	8.24E-02	8.17E-02
U232	0.	2.44E-04	5.17E-04	8.41E-04	9.70E-04	9.27E-04	6.84E-04	4.52E-04	1.07E-04	3.67E-06	7.81E-08
U233	0.	5.70E-12	8.70E-11	1.10E-09	4.47E-09	6.53E-08	6.51E-07	2.24E-06	1.45E-05	8.49E-05	2.14E-04
U234	0.	1.08E-03	2.06E-03	4.23E-03	1.02E-02	2.42E-02	5.10E-02	7.39E-02	1.17E-01	1.35E-01	1.36E-01
U235	0.	2.84E-08	7.11E-08	1.71E-07	2.84E-07	7.11E-07	1.70E-06	2.84E-06	7.08E-06	1.69E-05	2.80E-05
U236	0.	1.75E-06	4.37E-06	1.05E-05	1.75E-05	4.36E-05	1.05E-04	1.74E-04	4.31E-04	1.02E-03	1.66E-03
U237	0.	3.57E-01	3.32E-01	2.92E-01	2.54E-01	1.16E-01	2.25E-02	3.40E-03	3.08E-06	2.35E-13	1.73E-21
NP237	0.	3.92E-06	2.35E-05	1.27E-04	3.32E-04	1.67E-03	6.36E-03	1.22E-02	3.13E-02	8.24E-02	8.17E-02
PU236	2.87E-02	2.25E-02	1.54E-02	6.47E-03	2.52E-03	6.57E-04	1.32E-04	7.90E-13	1.14E-28	0.	0.
PU238	3.79E+02	3.74E+02	3.72E+02	3.62E+02	3.51E+02	3.12E+02	2.38E+02	1.74E+02	5.41E+01	3.55E+00	1.57E-01
PU239	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.90E+01	2.89E+01	2.86E+01	2.83E+01
PU240	6.83E+01	6.83E+01	6.82E+01	6.82E+01	6.82E+01	6.81E+01	5.99E+01	5.96E+01	5.87E+01	5.72E+01	5.44E+01
PU241	1.49E+04	1.42E+04	1.33E+04	1.13E+04	9.35E+03	6.83E+03	8.99E+02	1.30E+02	1.23E+01	9.39E+00	6.90E+17
PU242	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01	3.13E-01
AM241	0.	2.33E+01	5.63E+01	1.24E+02	1.84E+02	3.44E+02	4.48E+02	4.45E+02	3.54E+02	2.02E+02	1.07E+02
SUMTOT	1.54E+04	1.47E+04	1.38E+04	1.18E+04	9.99E+03	5.38E+03	1.07E+03	8.47E+02	4.96E+02	2.92E+02	1.90E+02
TOTAL	1.54E+04	1.47E+04	1.38E+04	1.18E+04	9.98E+03	5.38E+03	1.47E+03	8.47E+02	4.96E+02	2.92E+02	1.90E+02

TABLE VIB

PU WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL + FIRST PLUTONIUM RECYCLE

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	1.KYR	2.5KYR	5.KYR	10.KYR	25.KYR	50.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
TL207	2.97E-07	1.81E-06	9.86E-06	2.57E-05	1.20E-04	6.31E-04	6.99E-04	9.92E-04	9.97E-04	9.88E-04	9.05E-04
TL209	1.59E-07	1.64E-06	1.13E-05	3.03E-05	1.38E-04	6.23E-04	7.04E-04	1.50E-03	1.75E-03	8.92E-05	2.11E-17
PB209	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.22E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
PB210	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
PB211	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
PB212	8.03E-08	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
BI210	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
BI211	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
BI212	8.03E-08	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
BI213	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.29E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
BI214	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
PO210	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
PO211	8.95E-10	5.45E-09	2.97E-08	7.72E-08	3.60E-07	1.33E-06	2.13E-06	2.99E-06	3.03E-06	2.97E-06	2.72E-06
PO213	7.06E-06	7.30E-05	5.00E-04	1.35E-03	6.15E-03	1.88E-02	3.14E-02	6.95E-02	7.77E-02	3.96E-03	9.47E-10
PO214	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
PO215	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
PO216	8.03E-08	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
PO218	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
AT217	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.29E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
RN219	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
RN220	8.03E-08	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
RN222	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
FR221	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.29E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
FR223	4.18E-09	2.55E-08	1.38E-07	3.60E-07	1.77E-06	8.05E-06	9.82E-06	1.39E-05	1.43E-05	1.39E-05	1.27E-05
RA223	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
RA224	8.03E-08	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
RA225	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.29E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
RA226	1.75E-04	1.04E-03	4.32E-03	8.57E-03	2.34E-02	5.09E-02	8.83E-02	7.23E-02	1.22E-02	2.03E-05	2.59E-05
RA228	4.15E-11	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
AC225	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.29E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
AC227	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
AC228	4.15E-11	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
TH227	2.94E-07	1.79E-06	9.75E-06	2.54E-05	1.25E-04	6.20E-04	6.91E-04	9.81E-04	9.86E-04	9.78E-04	8.95E-04
TH228	8.03E-08	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
TH229	7.21E-06	7.40E-05	5.12E-04	1.38E-03	6.29E-03	1.92E-02	3.21E-02	7.11E-02	7.95E-02	4.05E-03	9.68E-10
TH230	1.03E-03	2.77E-04	6.72E-03	1.13E-02	2.55E-02	5.03E-02	8.74E-02	7.21E-02	1.22E-02	2.03E-05	2.59E-05
TH231	2.80E-05	8.86E-05	1.57E-04	2.49E-04	5.09E-04	8.19E-04	9.45E-04	1.00E-03	1.00E-03	9.91E-04	9.08E-04
TH232	4.15E-11	2.47E-10	1.27E-09	3.14E-09	1.34E-08	4.21E-08	7.55E-08	2.42E-07	8.18E-07	7.20E-06	2.72E-05
TH234	4.61E-08	1.20E-07	2.87E-07	4.77E-07	1.18E-06	2.74E-06	4.40E-06	1.11E-05	2.21E-05	2.03E-05	2.59E-05
PA231	2.98E-07	1.82E-06	9.89E-06	2.57E-05	1.27E-04	6.32E-04	7.01E-04	9.95E-04	1.00E-03	9.91E-04	9.08E-04
PA233	8.17E-02	1.01E-01	1.03E-01	1.03E-01	1.02E-01	1.01E-01	1.00E-01	9.37E-02	7.47E-02	4.05E-03	8.92E-10
PA234M	4.81E-08	1.20E-07	2.87E-07	4.77E-07	1.18E-06	2.74E-06	4.40E-06	1.11E-05	2.21E-05	2.03E-05	2.59E-05
U233	2.14E-04	8.20E-04	2.34E-03	4.04E-03	1.02E-02	2.27E-02	3.51E-02	7.04E-02	7.93E-02	4.05E-03	9.65E-10
U234	1.36E-01	1.36E-01	1.34E-01	1.33E-01	1.27E-01	1.15E-01	1.03E-01	5.89E-02	8.28E-03	2.03E-05	2.59E-05
U235	2.80E-05	8.86E-05	1.57E-04	2.49E-04	5.09E-04	8.19E-04	9.43E-04	1.00E-03	1.00E-03	9.91E-04	9.08E-04
U236	1.00E-03	3.65E-03	7.83E-03	1.09E-02	1.57E-02	1.70E-02	1.70E-02	1.69E-02	1.00E-02	1.29E-02	9.38E-04
U238	4.81E-08	1.20E-07	2.87E-07	4.77E-07	1.18E-06	2.74E-06	4.40E-06	1.11E-05	2.21E-05	2.03E-05	2.59E-05
NP237	8.17E-02	1.01E-01	1.03E-01	1.03E-01	1.02E-01	1.01E-01	1.00E-01	9.37E-02	7.47E-02	4.05E-03	8.92E-10
PU239	2.63E+01	2.71E+01	2.48E+01	2.19E+01	1.43E+01	5.30E+00	1.70E+00	5.81E-03	1.35E-11	0.	0.
PU240	5.44E+01	4.84E+01	3.20E+01	2.14E+01	4.84E+00	1.28E+00	2.13E-03	2.04E-12	5.38E-15	4.99E-15	2.35E-15
PU242	3.13E-01	3.12E-01	3.10E-01	3.08E-01	2.99E-01	2.81E-01	2.61E-01	1.81E-01	5.03E-02	3.59E-09	0.
SUBTOT	8.33E+01	7.44E+01	5.79E+01	4.43E+01	1.99E+01	6.74E+00	3.27E+00	1.82E+00	1.07E+00	6.87E-02	1.15E-02
TOTAL	1.90E+02	8.41E+01	5.79E+01	4.43E+01	1.94E+01	6.74E+00	3.27E+00	1.82E+00	1.07E+00	6.87E-02	1.16E-02

TABLE VIIA

LWR SPENT FUEL - A MIX OF 40% BWR FUEL AND 60% PWR FUEL + 2ND PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29900.MWD, FLUX= 1.38E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	DISCHARGE	1.YR	2.5YR	6.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
TL207	0.	1.70E-06	2.73E-06	4.13E-06	7.25E-06	1.06E-05	2.11E-05	3.87E-05	5.41E-05	1.05E-04	2.32E-04	3.65E-04
TL208	0.	1.57E-03	2.40E-03	3.78E-03	6.05E-03	7.27E-03	7.25E-03	5.20E-03	3.54E-03	8.35E-04	2.88E-05	6.16E-07
TL209	0.	1.48E-09	1.63E-09	1.88E-09	2.48E-09	3.22E-09	6.41E-09	1.67E-08	3.41E-08	1.77E-07	1.25E-06	4.23E-06
PB209	0.	6.73E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
PB210	0.	1.52E-09	2.75E-09	5.65E-09	1.94E-08	5.20E-08	4.60E-07	4.63E-06	1.83E-05	2.01E-04	1.44E-03	5.36E-03
PB211	0.	1.71E-06	2.74E-06	4.15E-06	7.27E-06	1.06E-05	2.11E-05	3.88E-05	5.43E-05	1.05E-04	2.32E-04	3.66E-04
PB212	0.	4.37E-03	6.85E-03	1.05E-02	1.68E-02	2.02E-02	2.01E-02	1.44E-02	9.83E-03	2.32E-03	7.99E-05	1.71E-06
PB214	0.	3.21E-08	4.78E-08	7.94E-08	1.92E-07	3.92E-07	1.89E-06	1.09E-05	3.31E-05	2.83E-04	1.98E-03	5.36E-03
BI210	0.	1.52E-09	2.75E-09	5.65E-09	1.94E-08	5.20E-08	4.60E-07	4.63E-06	1.83E-05	2.01E-04	1.44E-03	5.36E-03
BI211	0.	1.71E-06	2.74E-06	4.15E-06	7.27E-06	1.06E-05	2.11E-05	3.88E-05	5.43E-05	1.05E-04	2.32E-04	3.66E-04
BI212	0.	4.37E-03	6.85E-03	1.05E-02	1.68E-02	2.02E-02	2.01E-02	1.44E-02	9.83E-03	2.32E-03	7.99E-05	1.71E-06
BI213	0.	6.73E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
BI214	0.	3.21E-08	4.78E-08	7.94E-08	1.92E-07	3.92E-07	1.88E-06	1.09E-05	3.31E-05	2.83E-04	1.98E-03	5.36E-03
PO210	0.	1.04E-09	2.06E-09	4.48E-09	1.66E-08	5.20E-08	4.63E-07	4.63E-06	1.83E-05	2.01E-04	1.44E-03	5.36E-03
PO211	0.	5.12E-09	6.21E-09	1.24E-08	2.18E-08	3.14E-08	6.34E-08	1.17E-07	1.83E-07	3.15E-07	6.97E-07	1.10E-06
PO212	0.	2.79E-05	4.38E-05	6.72E-05	1.07E-02	1.29E-02	1.29E-02	9.25E-01	6.29E-03	1.49E-03	5.11E-05	1.10E-06
PO213	0.	6.58E-08	7.23E-08	8.34E-08	1.10E-07	1.43E-07	2.85E-07	7.41E-07	1.52E-06	7.86E-06	5.56E-05	1.88E-04
PO214	0.	3.21E-08	4.78E-08	7.94E-08	1.92E-07	3.92E-07	1.89E-06	1.09E-05	3.31E-05	2.83E-04	1.98E-03	5.36E-03
PO215	0.	1.71E-06	2.74E-06	4.15E-06	7.27E-06	1.06E-05	2.11E-05	3.88E-05	5.43E-05	1.05E-04	2.32E-04	3.66E-04
PO216	0.	4.37E-03	6.85E-03	1.05E-02	1.68E-02	2.02E-02	2.01E-02	1.44E-02	9.83E-03	2.32E-03	7.99E-05	1.71E-06
PO218	0.	3.21E-08	4.78E-08	7.94E-08	1.92E-07	3.92E-07	1.89E-06	1.09E-05	3.31E-05	2.83E-04	1.98E-03	5.36E-03
AT217	0.	6.73E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
RN219	0.	1.71E-06	2.74E-06	4.15E-06	7.27E-06	1.06E-05	2.11E-05	3.88E-05	5.43E-05	1.05E-04	2.32E-04	3.66E-04
RN220	0.	4.37E-03	6.85E-03	1.05E-02	1.68E-02	2.02E-02	2.01E-02	1.44E-02	9.83E-03	2.32E-03	7.99E-05	1.71E-06
RN222	0.	3.21E-08	4.78E-08	7.94E-08	1.92E-07	3.92E-07	1.89E-06	1.09E-05	3.31E-05	2.83E-04	1.98E-03	5.36E-03
FR221	0.	6.73E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
FR223	0.	2.48E-08	3.82E-08	5.80E-08	1.02E-07	1.48E-07	2.95E-07	5.44E-07	7.60E-07	1.47E-06	3.25E-06	5.13E-06
RA223	0.	1.71E-06	2.74E-06	4.15E-06	7.27E-06	1.06E-05	2.11E-05	3.88E-05	5.43E-05	1.05E-04	2.32E-04	3.66E-04
RA224	0.	4.37E-03	6.85E-03	1.05E-02	1.68E-02	2.02E-02	2.01E-02	1.44E-02	9.83E-03	2.32E-03	7.99E-05	1.71E-06
RA225	0.	6.68E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
RA226	0.	3.21E-08	4.78E-08	7.94E-08	1.92E-07	3.92E-07	1.89E-06	1.09E-05	3.31E-05	2.83E-04	1.98E-03	5.36E-03
RA228	0.	3.69E-12	6.35E-12	1.17E-11	2.90E-11	5.52E-11	1.83E-10	5.24E-10	9.25E-10	2.54E-09	6.21E-09	1.06E-08
AC225	0.	6.73E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
AC227	0.	1.77E-06	2.73E-06	4.14E-06	7.27E-06	1.06E-05	2.11E-05	3.88E-05	5.43E-05	1.05E-04	2.32E-04	3.66E-04
AC228	0.	3.69E-12	6.35E-12	1.17E-11	2.90E-11	5.52E-11	1.83E-10	5.24E-10	9.25E-10	2.54E-09	6.21E-09	1.06E-08
TH227	0.	1.67E-06	2.70E-06	4.09E-06	7.17E-06	1.04E-05	2.04E-05	3.83E-05	5.35E-05	1.04E-04	2.29E-04	3.61E-04
TH228	0.	4.35E-03	6.83E-03	1.05E-02	1.68E-02	2.02E-02	2.01E-02	1.44E-02	9.83E-03	2.32E-03	7.99E-05	1.71E-06
TH229	0.	6.65E-08	7.39E-08	8.53E-08	1.13E-07	1.46E-07	2.91E-07	7.57E-07	1.55E-06	8.03E-06	5.68E-05	1.92E-04
TH230	0.	3.14E-05	4.12E-05	5.64E-05	9.32E-05	1.38E-04	3.29E-04	9.02E-04	1.73E-03	5.74E-03	1.71E-02	3.04E-02
TH231	0.	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.58E-02	1.59E-02	1.60E-02
TH232	0.	2.58E-11	3.57E-11	5.05E-11	8.52E-11	1.25E-10	2.74E-10	6.22E-10	1.02E-09	2.54E-09	6.21E-09	1.06E-08
TH234	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01
PA231	0.	3.21E-05	3.25E-05	3.30E-05	3.41E-05	3.55E-05	4.05E-05	5.21E-05	6.55E-05	1.15E-04	2.62E-04	4.66E-04
PA233	0.	3.18E-01	3.18E-01	3.19E-01	3.21E-01	3.25E-01	3.43E-01	4.29E-01	5.28E-01	8.57E-01	1.38E+00	1.70E+00
PA234M	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01
PA234	0.	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04
U232	0.	1.10E-02	1.38E-02	1.84E-02	2.84E-02	2.15E-02	1.97E-02	1.41E-02	9.57E-03	2.26E-03	7.78E-05	1.66E-06
U233	0.	7.72E-05	7.87E-05	8.09E-05	8.56E-05	9.12E-05	1.13E-04	1.71E-04	2.53E-04	7.01E-04	2.41E-03	5.07E-03
U234	1.83E+00	1.13E+00	1.15E+00	1.14E+00	1.25E+00	1.33E+00	1.4 E+00	2.15E+00	2.81E+00	3.46E+00	3.88E+00	3.88E+00
U235	5.00E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.57E-02	1.58E-02	1.59E-02	1.60E-02
U236	3.07E-02	2.01E-01	2.01E-01	2.01E-01	2.02E-01	2.02E-01	2.03E-01	2.03E-01	2.04E-01	2.08E-01	2.18E-01	2.28E-01
U237	0.	6.05E+00	5.65E+00	5.27E+00	4.47E+00	3.71E+00	1.81E+00	3.57E-01	5.49E-02	1.36E-04	8.45E-05	8.17E-05

TABLE VIIA (Continued)

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL + 2ND PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29944.M=D, FLUX= 1.38E+13N/CM**2=SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	DISCHARGE	1.YR	2.5YR	6.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
U238	3.21E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01
NP237	0.	3.18E-01	3.18E-01	3.19E-01	3.21E-01	3.25E-01	3.49F-01	4.29E-01	5.28E-01	8.57E-01	1.38E+00	1.70E+00
NP239	0.	8.13E+01	8.13E+01	8.13E+01	8.13E+01	8.12E+01	8.11E+01	8.09F+01	8.06F+01	7.95E+01	7.70E+01	7.43E+01
PU236	2.31E-01	3.42E-01	2.66E-01	1.86E-01	7.95E-02	3.01E-02	7.84E-04	1.58E-07	9.42E-12	1.36F-27	0.	0.
PU238	4.92E+03	7.17E+03	7.42E+03	7.41E+03	7.22E+03	7.00E+03	6.24E+03	4.76E+03	3.50E+03	1.11E+03	7.91E+01	4.65E+00
PU239	3.61E+02	4.05E+02	4.05E+02	4.05E+02	4.05E+02	4.05E+02	4.05E+02	4.05E+02	4.04F+02	4.03E+02	4.00E+02	3.96E+02
PU240	7.51E+02	9.26E+02	9.27E+02	9.29E+02	9.33E+02	9.37E+02	9.47E+02	9.54E+02	9.53E+02	9.39E+02	9.06E+02	8.70E+02
PU241	1.73E+05	2.36E+05	2.26E+05	2.10E+05	1.79E+05	1.48E+05	7.34E+04	1.42F+04	2.19E+03	5.45E+00	3.58E+00	3.27E+00
PU242	3.86E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00	6.21E+00
PU243	0.	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06
AM241	3.09E+02	5.69E+02	9.37E+02	1.44E+03	2.53E+03	3.56E+03	5.99F+03	7.42E+03	7.54E+03	5.99E+03	3.42E+03	1.41E+03
AM242M	0.	7.55E+01	7.52E+01	7.47E+01	7.35E+01	7.21E+01	6.74E+01	5.74E+01	4.79E+01	2.42E+01	4.90E+00	7.91E-01
AM242	0.	7.55E+01	7.52E+01	7.47E+01	7.35E+01	7.21E+01	6.74E+01	5.74E+01	4.79E+01	2.42E+01	4.90E+00	7.91E-01
AM243	0.	8.13E+01	8.13E+01	8.13E+01	8.13E+01	8.12E+01	8.11E+01	8.09E+01	8.06E+01	7.95E+01	7.70E+01	7.43E+01
AM245	0.	1.06E-06	4.72E+07	1.41E+07	8.38E-09	3.34E-10	1.87E-15	1.04E-27	1.04E-41	0.	0.	0.
CM242	0.	7.88E+04	1.67E+04	1.68E+03	6.75E+01	5.93E+01	5.52E+01	4.71E+01	3.92E+01	1.98E+01	4.02E+00	8.48E-01
CM243	0.	1.48E+01	1.45E+01	1.41F+01	1.30E+01	1.19E+01	8.64E+00	4.05E+00	1.70E+00	6.61E-02	3.3HE-05	5.8HE-09
CM244	0.	1.39E+04	1.34E+04	1.26F+04	1.11E+04	9.49E+03	5.34E+03	1.40E+03	3.03E+02	9.70E-01	1.47E-06	4.48E-13
CM245	0.	3.55E+00	3.55E+00	3.55E+00	3.55E+00	3.55E+00	3.54E+00	3.53E+00	3.52E+00	3.48F+00	3.37E+00	3.20E+00
CM246	0.	6.97E-01	6.97E-01	6.97E-01	6.97E-01	6.96E-01	6.95E-01	6.91F-01	6.87F-01	6.72E-01	6.3HE-01	6.02E-01
CM247	0.	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76F-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06	3.76E-06
CM248	0.	1.61E-05	1.61E-05	1.61E-05	1.61F-05	1.61E-05	1.61E-05	1.61E-05	1.61E-05	1.61E-05	1.61E-05	1.61E-05
BK249	0.	7.04E-02	3.15E-02	9.39E-03	5.59E-04	2.22E-05	1.25E-10	6.94E-23	6.91E-37	0.	0.	0.
CF249	0.	1.17E-04	2.12E-04	2.65E-04	2.89E-04	2.84F-04	2.76E-04	2.57E-04	2.38E-04	1.77F-04	8.49E-05	4.05E-05
CF250	0.	7.99E-04	7.58E-04	7.00E-04	5.82E-04	4.71E-04	2.13E-04	3.33E-05	4.00E-06	1.42E-09	1.05E-12	1.01E-12
CF251	0.	7.71E-06	7.71E-06	7.70E-06	7.68E-06	7.65E-06	7.56E-06	7.34E-06	7.14E-06	6.36F-06	4.86E-06	3.57E-06
CF252	0.	1.00E-03	7.70E-04	5.20F-04	2.08E-04	7.29E-05	1.43E-06	1.50E-10	4.23E-15	3.67E-32	0.	0.
SUBTOT	1.79E+05	3.39E+05	2.66E+05	2.35E+05	2.01E+05	1.70E+05	9.27E+04	2.97E+04	1.52E+04	8.69E+03	5.00E+03	3.25E+03
TOTAL	1.79E+05	3.39E+05	2.66E+05	2.35E+05	2.01E+05	1.70E+05	9.27E+04	2.97E+04	1.52E+04	8.69E+03	5.00E+03	3.25E+03

TABLE VIIB

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL + 2ND PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29944.M=D, FLUX= 1.38E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
TL207	0.	3.65E-04	8.66E-04	2.04E-03	3.39E-03	8.28E-03	1.76E-02	2.40E-02	3.02E-02	3.03E-02	3.01E-02	2.75E-02
TL208	0.	6.16E-07	1.03E-06	2.87E-06	5.37E-06	1.66E-05	4.56E-05	7.90E-05	2.46E-04	8.22E-04	7.27E-03	2.72E-04
TL209	0.	4.23E-06	3.64E-05	2.34E-04	6.20E-04	2.80E-03	8.54E-03	1.42E-02	3.15E-02	3.53E-02	1.60E-03	4.30E-16
PB209	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.88E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
PB210	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
PB211	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
PB212	0.	1.71E-06	2.87E-06	7.97E-06	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
PB214	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
BI210	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
BI211	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
BI212	0.	1.71E-06	2.87E-06	7.97E-06	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
BI213	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.89E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
BI214	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
PO210	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
PO211	0.	1.10E-06	2.61E-06	6.14E-06	1.02E-05	2.49E-05	5.29E-05	7.23E-05	9.10E-05	9.13E-05	9.05E-05	8.29E-05
PO212	0.	1.10E-06	1.84E-08	5.10E-08	9.54E-08	2.95E-07	8.10E-07	1.41E-06	4.37E-06	1.46E-05	1.29E-04	4.84E-04
PO213	0.	1.88E-04	1.62E-03	1.04E-02	2.75E-02	1.24E-01	3.80E-01	6.33E-01	1.40E+00	1.57E+00	7.99E-02	1.91E-14
PO214	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
PO215	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
PO216	0.	1.71E-06	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
PO218	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
AT217	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.88E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
RN219	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
RN220	0.	1.71E-06	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
RN222	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
FR221	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.88E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
FR223	0.	5.13E-06	1.22E-05	2.87E-05	4.78E-05	1.16E-04	2.47E-04	3.38E-04	4.25E-04	4.26E-04	4.22E-04	3.87E-04
RA223	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
RA224	0.	1.71E-06	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
RA225	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.88E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
RA226	0.	5.36E-03	3.05E-02	1.24E-01	2.46E-01	6.71E-01	1.46E+00	1.97E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
RA228	0.	1.06E-08	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
AC225	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.88E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
AC227	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
AC228	0.	1.06E-08	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
TH227	0.	5.61E-04	8.57E-04	2.02E-03	3.35E-03	8.19E-03	1.74E-02	2.38E-02	2.99E-02	3.00E-02	2.97E-02	2.72E-02
TH228	0.	1.71E-06	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
TH229	0.	1.92E-04	1.66E-03	1.06E-02	2.82E-02	1.27E-01	3.88E-01	6.47E-01	1.43E+00	1.60E+00	8.17E-02	1.95E-14
TH230	0.	3.04E-02	8.01E-02	1.93E-01	3.16E-01	7.31E-01	1.45E+00	1.95E+00	2.18E+00	6.33E-01	3.14E-01	3.09E-01
TH231	0.	1.60E-02	1.66E-02	1.79E-02	1.92E-02	2.30E-02	2.77E-02	2.96E-02	3.04E-02	3.04E-02	3.02E-02	2.76E-02
TH232	0.	1.06E-08	2.87E-08	7.97E-08	1.49E-07	4.62E-07	1.27E-06	2.20E-06	6.83E-06	2.28E-05	2.02E-04	7.56E-04
TH234	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.09E-01
PA231	0.	3.66E-04	8.69E-04	2.05E-03	3.40E-03	8.31E-03	1.76E-02	2.41E-02	3.03E-02	3.04E-02	3.02E-02	2.76E-02
PA233	0.	1.79E+00	2.04E+00	2.07E+00	2.07E+00	2.06E+00	2.04E+00	2.02E+00	1.89E+00	1.51E+00	8.17E-02	1.80E-14
PA234M	0.	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.09E-01
PA234	0.	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.14E-04	3.09E-04
U233	0.	5.07E-03	1.74E-02	4.78E-02	8.21E-02	2.00E-01	4.63E-01	7.09E-01	1.42E+00	1.60E+00	8.17E-02	1.95E-14
U234	1.83E+00	3.88E+00	3.87E+00	3.83E+00	3.79E+00	3.65E+00	3.34E+00	3.02E+00	1.86E+00	5.30E-01	3.14E-01	3.09E-01
U235	5.00E-02	1.60E-02	1.66E-02	1.79E-02	1.92E-02	2.30E-02	2.77E-02	2.96E-02	3.04E-02	3.04E-02	3.02E-02	2.76E-02
U236	3.07E-02	2.28E-01	2.63E-01	3.27E-01	3.76E-01	4.53E-01	4.73E-01	4.73E-01	4.70E-01	4.60E-01	3.55E-01	2.01E-02
U237	0.	8.17E-05	7.21E-05	5.37E-05	3.84E-05	1.09E-05	5.81E-07	2.03E-08	1.06E-15	0.	0.	0.
U238	3.21E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.14E-01	3.09E-01

TABLE VIIB (Continued)

LWR SPENT FUEL, A MIX OF 40% BWR FUEL AND 60% PWR FUEL = 2ND PLUTONIUM RECYCLE

POWER= 22.02MW, BURNUP= 29944.MWD, FLUX= 1.38E+13N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LWR FUEL

	CHARGE	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
U240	0.	1.23E+10	3.07E+10	7.35E+10	1.22E+09	3.00E+09	5.97E+09	1.12E+08	2.79E+08	5.35E+08	5.78E+08	2.72E+08
NP237	0.	1.70E+00	2.04E+00	2.07E+00	2.07E+00	2.06E+00	2.04E+00	2.02E+00	1.89E+00	1.51E+00	8.17E-02	1.80E-14
NP239	0.	7.43E+01	6.48E+01	4.72E+01	3.29E+01	8.44E+00	3.54E-01	9.46E-03	3.71E-06	3.60E-06	2.46E-06	5.49E-08
NP240M	0.	1.23E+10	3.07E+10	7.35E+10	1.22E+09	3.00E+09	5.97E+09	1.12E+08	2.79E+08	5.35E+08	5.78E+08	2.72E+08
PU239	3.61E+02	3.94E+02	3.82E+02	3.51E+02	3.18E+02	2.14E+02	9.03E+01	2.58E+01	8.82E+02	3.60E+06	2.46E+06	5.49E-08
PU240	7.51E+02	8.70E+02	7.46E+02	5.21E+02	3.46E+02	7.43E+01	2.05E+00	3.40E+02	2.79E+08	5.36E+08	5.79E+08	2.72E+08
PU241	1.73E+05	3.27E+00	2.88E+00	2.15E+00	1.54E+00	4.37E-01	2.32E+02	8.12E+04	4.23E-11	0.	0.	0.
PU242	3.80E+00	6.21E+00	6.19E+00	6.16E+00	6.11E+00	5.95E+00	5.58E+00	5.19E+00	3.60E+00	1.00E+00	7.13E-04	0.
PU243	0.	3.76E+06	3.76E+06	3.76E+06	3.76E+06	3.75E+06	3.75E+06	3.74E+06	3.71E+06	3.60E+06	2.46E+06	5.49E+08
PU244	0.	1.23E+10	3.08E+10	7.36E+10	1.22E+09	3.01E+09	6.98E+09	1.12E+08	2.79E+08	5.36E+08	5.79E+08	2.72E+08
AM241	3.09E+02	1.81E+03	1.66E+02	2.86E+00	1.61E+00	4.37E-01	2.32E+02	8.12E+04	4.47E-11	0.	0.	0.
AM243	0.	7.43E+01	6.48E+01	4.72E+01	3.29E+01	8.44E+00	3.54E-01	9.46E-03	3.71E-06	3.60E-06	2.46E-06	5.49E-08
CM245	0.	3.20E+00	2.88E+00	2.15E+00	1.53E+00	4.36E-01	2.32E+02	8.10E+04	4.22E-11	0.	0.	0.
CM246	0.	6.02E-01	4.83E-01	2.89E-01	1.60E-01	1.70E+02	1.02E+04	2.85E+07	9.34E-18	7.25E-30	0.	0.
CM247	0.	3.76E+06	3.76E+06	3.76E+06	3.76E+06	3.75E+06	3.75E+06	3.74E+06	3.71E+06	3.60E+06	2.46E+06	5.49E+08
CM248	0.	1.60E+05	1.60E+05	1.59E+05	1.58E+05	1.53E+05	1.43E+05	1.32E+05	8.90E+06	2.24E+06	4.53E+14	0.
SUBTOT	1.75E+05	3.24E+03	1.45E+03	9.91E+02	7.52E+02	3.29E+02	1.10E+02	6.54E+01	4.54E+01	2.70E+01	5.99E+00	4.67E+00
TOTAL	1.79E+05	3.25E+03	1.45E+03	9.91E+02	7.52E+02	3.29E+02	1.10E+02	6.54E+01	4.54E+01	2.70E+01	5.99E+00	4.67E+00

TABLE VIIIA

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL - 2ND PLUTONIUM RECYCLE

POWER= 2,01MW, BURNUP= 2738,MWD, FLUX= 1,26E+12N/CM**2*SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN THE WASTE

	CHARGE	SEPARATION	1,0E+00YR	2,5E+00YR	6,0E+00YR	1,0E+01YR	2,5E+01YR	6,0E+01YR	1,0E+02YR	2,5E+02YR	6,0E+02YR	1,0E+03YR
TL207	0,	1,56E-07	2,49E-07	3,75E-07	6,47E-07	9,22E-07	1,69E-06	2,53E-06	2,84E-06	2,98E-06	3,08E-06	3,18E-06
TL208	0,	1,44E-04	1,01E-04	6,10E-05	2,17E-05	1,04E-05	6,65E-06	4,76E-06	3,24E-06	7,64E-07	2,63E-08	5,65E-10
TL209	0,	1,35E-10	1,34E-10	1,35E-10	1,40E-10	1,49E-10	2,20E-10	6,19E-10	1,48E-09	8,63E-09	5,09E-08	1,48E-07
PB209	0,	6,15E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
PB210	0,	1,39E-10	2,49E-10	4,84E-10	1,33E-09	2,78E-09	1,20E-08	5,22E-08	1,31E-07	9,29E-07	8,36E-06	2,52E-05
PB211	0,	1,56E-07	2,50E-07	3,76E-07	6,49E-07	9,25E-07	1,70E-06	2,54E-06	2,84E-06	2,99E-06	3,09E-06	3,18E-06
PB212	0,	3,99E-04	2,82E-04	1,69E-04	6,02E-05	2,90E-05	1,85E-05	1,32E-05	8,99E-06	2,12E-06	7,31E-08	1,57E-09
PB214	0,	2,94E-09	4,18E-09	6,05E-09	1,05E-08	1,56E-08	3,61E-08	9,76E-08	2,06E-07	1,19E-06	8,36E-06	2,52E-05
BI210	0,	1,39E-10	2,49E-10	4,84E-10	1,33E-09	2,78E-09	1,20E-08	5,22E-08	1,31E-07	9,29E-07	8,36E-06	2,52E-05
BI211	0,	1,56E-07	2,50E-07	3,76E-07	6,49E-07	9,25E-07	1,70E-06	2,54E-06	2,84E-06	2,99E-06	3,09E-06	3,18E-06
BI212	0,	3,99E-04	2,82E-04	1,69E-04	6,02E-05	2,90E-05	1,85E-05	1,32E-05	8,99E-06	2,12E-06	7,31E-08	1,57E-09
BI213	0,	6,15E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
BI214	0,	2,94E-09	4,18E-09	6,05E-09	1,05E-08	1,56E-08	3,61E-08	9,76E-08	2,06E-07	1,19E-06	8,36E-06	2,52E-05
PO210	0,	9,70E-11	1,87E-10	3,91E-10	1,17E-09	2,79E-09	1,20E-08	5,22E-08	1,31E-07	9,29E-07	8,36E-06	2,52E-05
PO211	0,	4,68E-10	7,49E-10	1,13E-09	1,95E-09	2,78E-09	5,09E-09	7,63E-09	8,53E-09	8,97E-09	9,26E-09	9,55E-09
PO212	0,	2,55E-04	1,80E-04	1,08E-04	3,86E-05	1,86E-05	1,18E-05	8,45E-06	5,75E-06	1,36E-06	4,68E-08	1,00E-09
PO213	0,	6,02E-09	5,96E-09	6,00E-09	6,21E-09	6,61E-09	9,80E-09	2,75E-08	6,56E-08	3,84E-07	2,28E-06	6,47E-06
PO214	0,	2,94E-09	4,18E-09	6,05E-09	1,05E-08	1,56E-08	3,61E-08	9,76E-08	2,06E-07	1,19E-06	8,36E-06	2,52E-05
PO215	0,	1,56E-07	2,50E-07	3,76E-07	6,49E-07	9,25E-07	1,70E-06	2,54E-06	2,84E-06	2,99E-06	3,09E-06	3,18E-06
PO216	0,	3,99E-04	2,82E-04	1,69E-04	6,02E-05	2,90E-05	1,85E-05	1,32E-05	8,99E-06	2,12E-06	7,31E-08	1,57E-09
PO218	0,	2,94E-09	4,18E-09	6,05E-09	1,05E-08	1,56E-08	3,61E-08	9,76E-08	2,06E-07	1,19E-06	8,36E-06	2,52E-05
AT217	0,	6,15E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
RN219	0,	1,56E-07	2,50E-07	3,76E-07	6,49E-07	9,25E-07	1,70E-06	2,54E-06	2,84E-06	2,99E-06	3,09E-06	3,18E-06
RN220	0,	3,99E-04	2,82E-04	1,69E-04	6,02E-05	2,90E-05	1,85E-05	1,32E-05	8,99E-06	2,12E-06	7,31E-08	1,57E-09
RN222	0,	2,94E-09	4,18E-09	6,05E-09	1,05E-08	1,56E-08	3,61E-08	9,76E-08	2,06E-07	1,19E-06	8,36E-06	2,52E-05
FR221	0,	6,15E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
FR223	0,	2,26E-09	3,49E-09	5,26E-09	9,07E-09	1,29E-08	2,37E-08	3,56E-08	3,98E-08	4,19E-08	4,32E-08	4,46E-08
RA223	0,	1,56E-07	2,50E-07	3,76E-07	6,49E-07	9,25E-07	1,70E-06	2,54E-06	2,84E-06	2,99E-06	3,09E-06	3,18E-06
RA224	0,	3,99E-04	2,82E-04	1,69E-04	6,02E-05	2,90E-05	1,85E-05	1,32E-05	8,99E-06	2,12E-06	7,31E-08	1,57E-09
RA225	0,	6,11E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
RA226	0,	2,94E-09	4,18E-09	6,05E-09	1,05E-08	1,56E-08	3,61E-08	9,76E-08	2,06E-07	1,19E-06	8,36E-06	2,52E-05
AC225	0,	6,15E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
AC227	0,	1,62E-07	2,49E-07	3,76E-07	6,48E-07	9,24E-07	1,69E-06	2,54E-06	2,84E-06	2,99E-06	3,09E-06	3,18E-06
TH227	0,	1,53E-07	2,46E-07	3,71E-07	6,40E-07	9,12E-07	1,67E-06	2,51E-06	2,80E-06	2,95E-06	3,04E-06	3,14E-06
TH228	0,	3,98E-04	2,80E-04	1,69E-04	6,00E-05	2,89E-05	1,85E-05	1,32E-05	8,99E-06	2,12E-06	7,31E-08	1,57E-09
TH229	0,	6,08E-09	6,09E-09	6,14E-09	6,35E-09	6,76E-09	1,00E-08	2,81E-08	6,71E-08	3,92E-07	2,32E-06	6,62E-06
TH230	0,	2,87E-06	2,88E-06	2,89E-06	2,94E-06	3,00F-06	3,39E-06	5,02E-06	7,92E-06	2,50E-05	7,95E-05	1,47E-04
TH231	0,	1,43E-03	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,44E-05	1,44E-05	1,46E-05	1,48E-05
TH234	0,	2,87E-02	2,88E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04
PA231	0,	2,94E-06	2,94E-06	2,94E-06	2,94E-06	2,94E-06	2,94E-06	2,95E-06	2,96E-06	3,00E-06	3,04E-06	3,14E-06
PA233	0,	2,91E-02	2,91E-02	2,91E-02	2,92E-02	2,93E-02	2,95E-02	3,02E-02	3,08E-02	3,30E-02	3,65E-02	3,87E-02
PA234M	0,	2,87E-02	2,88E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04
PA234	0,	2,87E-05	2,88E-07	2,87E-07	2,87E-07	2,87E-07	2,87E-07	2,87E-07	2,87E-07	2,87E-07	2,87E-07	2,87E-07
U232	0,	1,00E-05	1,26E-05	1,53E-05	1,86E-05	1,97E-05	1,80E-05	1,29E-05	8,75E-06	2,07E-06	7,11F-08	1,51E-09
U233	0,	7,05E-08	2,09E-07	4,09E-07	8,46E-07	1,35E-06	3,23E-06	7,70E-06	1,29E-05	3,34E-05	8,56E-05	1,50E-04
U234	1,68E-01	1,03E-03	1,10E-03	1,20E-03	1,67E-03	2,13E-03	3,73E-03	6,90E-03	9,73E-03	1,57E-02	1,92E-02	1,94E-02
U235	4,57E-03	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,43E-05	1,44E-05	1,44E-05	1,46E-05	1,48E-05
U236	2,81E-03	1,84E-04	1,84E-04	1,84E-04	1,84E-04	1,85E-04	1,86E-04	1,89E-04	1,94E-04	2,12E-04	2,54E-04	2,99E-04
U237	0,	5,53E-03	5,17E-03	4,82E-03	4,09E-03	3,39E-03	1,68E-03	3,34E-04	5,81E-05	8,01E-06	7,73E-06	7,47E-06
U238	2,94E-02	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04	2,87E-04
NP237	0,	2,91E-02	2,91E-02	2,91E-02	2,92E-02	2,93E-02	2,95E-02	3,02E-02	3,08E-02	3,30E-02	3,65E-02	3,87E-02
NP239	0,	7,43E+00	7,43E+00	7,43E+00	7,43E+00	7,43E+00	7,42E+00	7,39E+00	7,37E+00	7,27E+00	7,04E+00	6,79E+00

TABLE VIIIA (Continued)

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = 2ND PLUTONIUM RECYCLE

POWER= 2.01MW, BURNUP= 2738.MWD, FLUX= 1.26E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN THE WASTE

	CHARGE	SEPARATION	1.0E+00YR	2.5E+00YR	6.0E+00YR	1.0E+01YR	2.5E+01YR	6.0E+01YR	1.0E+02YR	2.5E+02YR	6.0E+02YR	1.0E+03YR
PU236	2.11E-02	3.13E-04	2.45E-04	1.70E-04	7.27E-05	2.75E-05	3.17E-07	1.44E-10	8.61E-15	1.24E-30	0.	0.
PU238	4.50E+02	6.56E+00	3.49E+01	4.14E+01	4.11E+01	4.00E+01	3.62E+01	2.87E+01	2.21E+01	8.54E+00	1.16E+00	1.55E-01
PU239	3.30E+01	3.70E-01	3.71E-01	3.71E-01	3.72E-01	3.73E-01	3.76E-01	3.84E-01	3.92E-01	4.22E-01	4.88E-01	5.61E-01
PU240	6.87E+01	8.47E-01	9.75E-01	1.16E+00	1.55E+00	1.93E+00	2.94E+00	3.89E+00	4.15E+00	4.16E+00	4.01E+00	3.85E+00
PU241	1.58E+04	2.16E+02	2.06E+02	1.92E+02	1.63E+02	1.36E+02	7.73E+01	1.33E+01	2.32E+00	3.20E-01	3.09E-01	2.99E-01
PU242	3.53E-01	5.68E-03	5.68E-03	5.69E-03	5.70E-03	5.71E-03	5.74E-03	5.81E-03	5.88E-03	6.05E-03	6.21E-03	6.27E-03
PU243	0.	3.44E-09	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07
AM241	2.83E+01	5.20E+01	5.22E+01	5.26E+01	5.33E+01	5.39E+01	5.49E+01	5.37E+01	5.08E+01	4.01E+01	2.30E+01	1.23E+01
AM242M	0.	6.90E+00	6.87E+00	6.83E+00	6.72E+00	6.60E+00	6.16E+00	5.25E+00	4.38E+00	2.21E+00	4.48E-01	7.23E-02
AM242	0.	6.90E+00	6.87E+00	6.83E+00	6.72E+00	6.60E+00	6.16E+00	5.25E+00	4.38E+00	2.21E+00	4.48E-01	7.23E-02
AM243	0.	7.43E+00	7.43E+00	7.43E+00	7.43E+00	7.43E+00	.42E+00	7.59E+00	7.37E+00	7.27E+00	7.04E+00	6.79E+00
AM245	0.	9.66E-08	4.32E-08	1.29E-08	7.67E-10	3.05E-11	.71E-16	9.55E-29	9.48E-43	0.	0.	0.
CM242	0.	7.21E+03	1.53E+03	1.54E+02	6.17E+00	5.42E+00	1.05E+00	4.31E+00	3.59E+00	1.81E+00	3.67E-01	5.93E-02
CM243	0.	1.36E+00	1.33E+00	1.29E+00	1.19E+00	1.09E+00	.90E-01	3.70E-01	1.56E-01	6.04E-03	3.09E-06	5.34E-10
CM244	0.	1.27E+03	1.22E+03	1.16E+03	1.01E+03	8.68E+02	.89E+02	1.28E+02	2.77E+01	8.87E+02	1.34E-07	4.46E-14
CM245	0.	3.25E+01	3.24E+01	3.24E+01	3.24E+01	3.24E+01	.24E+01	3.23E+01	3.22E+01	3.18E+01	3.09E+01	2.98E+01
CM246	0.	6.38E-02	6.38E-02	6.37E-02	6.37E-02	6.37E-02	.35E-02	6.32E-02	6.28E-02	6.15E-02	5.94E-02	5.50E-02
CM247	0.	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.44E-07
CM248	0.	1.47E-06	1.47E-06	1.47E-06	1.47E-06	1.47E-06	.47E-06	1.47E-06	1.47E-06	1.47E-06	1.47E-06	1.47E-06
BK249	0.	6.44E-03	2.88E-03	8.58E-04	5.11E-05	2.03E-06	.14E-11	6.37E-24	6.32E-38	0.	0.	0.
CF249	0.	1.07E-05	1.94E-05	2.43E-05	2.61E-05	2.60E-05	.52E-05	2.35E-05	2.18E-05	1.82E-05	8.13E-06	3.70E-06
CF250	0.	7.31E-05	6.93E-05	6.40E-05	5.32E-05	4.30E-05	.94E-05	3.04E-06	3.66E-07	1.29E-10	9.41E-14	9.26E-14
CF251	0.	7.05E-07	7.05E-07	7.04E-07	7.02E-07	7.00E-07	.92E-07	6.73E-07	6.53E-07	5.82E-07	4.44E-07	3.26E-07
CF252	0.	9.15E-05	7.04E-05	4.75E-05	1.90E-05	6.67E-06	.31E-07	1.37E-11	3.86E-16	3.35E-33	0.	0.
SUBTOT	1.64E+04	8.78E+03	3.08E+03	1.63E+03	1.31E+03	1.13E+03	.84E+02	2.58E+02	1.35E+02	7.48E+01	4.48E+01	3.14E+01
TOTAL	1.64E+04	8.78E+03	3.08E+03	1.63E+03	1.31E+03	1.13E+03	.84E+02	2.58E+02	1.35E+02	7.48E+01	4.48E+01	3.14E+01

TABLE VIIIB

LWR WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = 2ND PLUTONIUM RECYCLE

POWER= 2.01MW, BURNUP= 2738.MWD, FLUX= 1.20E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN THE WASTE

		CHARGE	1.0E+00KYR	2.5E+00KYR	5.0E+00KYR	1.0E+01KYR	2.5E+01KYR	5.0E+01KYR	1.0E+02KYR	3.0E+02KYR	1.0E+03KYR	1.0E+04KYR	1.0E+05KYR
TL207	0.		3.18E-06	3.55E-06	4.55E-06	5.96E-06	1.43E-05	4.36E-05	7.25E-05	1.06E-04	1.07E-04	1.06E-04	9.70E-05
TL208	0.		5.65E-10	1.52E-11	5.25E-11	1.13E-10	4.22E-10	1.27E-09	2.24E-09	7.13E-09	2.40E-08	2.13E-07	7.97E-07
TL209	0.		1.46E-07	9.45E-07	5.21E-06	1.32E-05	5.74E-05	1.74E-04	2.90E-04	6.41E-04	7.17E-04	3.66E-05	8.74E-18
PB209	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
PB210	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
PB211	0.		3.18E-06	3.56E-06	4.56E-06	5.98E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
PB212	0.		1.57E-09	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
PB214	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
BI210	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
BI211	0.		3.18E-06	3.56E-06	4.56E-06	5.98E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
BI212	0.		1.57E-09	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
BI213	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
BI214	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
PO210	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
PO211	0.		9.55E-09	1.07E-08	1.37E-08	1.79E-08	4.30E-08	1.31E-07	2.18E-07	3.19E-07	3.21E-07	3.19E-07	2.92E-07
PO212	0.		1.00E-09	2.70E-11	9.34E-11	2.01E-10	7.51E-10	2.24E-09	3.99E-09	1.27E-08	4.27E-08	3.79E-07	1.42E-06
PO213	0.		6.47E-06	4.20E-05	2.31E-04	5.85E-04	2.55E-03	7.73E-03	1.29E-02	2.85E-02	3.19E-02	1.63E-03	3.88E-16
PO214	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
PO215	0.		3.18E-06	3.56E-06	4.56E-06	5.98E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
PO216	0.		1.57E-09	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
PO218	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
AT217	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
RN219	0.		3.18E-06	3.56E-06	4.56E-06	5.98E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
RN220	0.		1.57E-09	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
RN222	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
FR221	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
FR223	0.		4.46E-08	4.99E-08	6.39E-08	8.37E-08	2.01E-07	6.12E-07	1.02E-06	1.49E-06	1.50E-06	1.49E-06	1.36E-06
RA223	0.		3.18E-06	3.56E-06	4.56E-06	5.98E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
RA224	0.		1.57E-09	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
RA225	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
RA226	0.		2.52E-05	1.51E-04	6.27E-04	1.25E-03	3.41E-03	7.42E-03	9.98E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
RA228	0.		1.42E-11	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
AC225	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
AC227	0.		3.18E-06	3.56E-06	4.56E-06	5.98E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
AC228	0.		1.42E-11	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
TH227	0.		3.14E-06	3.51E-06	4.50E-06	5.89E-06	1.41E-05	4.31E-05	7.17E-05	1.05E-04	1.06E-04	1.05E-04	9.59E-05
TH228	0.		1.57E-09	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
TH229	0.		6.62E-06	4.30E-05	2.37E-04	5.98E-04	2.61E-03	7.90E-03	1.32E-02	2.92E-02	3.26E-02	1.66E-03	3.97E-16
TH230	0.		1.47E-04	4.01E-04	9.76E-04	1.61E-03	3.72E-03	7.37E-03	9.87E-03	1.06E-02	2.04E-03	2.87E-04	2.83E-04
TH231	0.		1.44E-05	1.58E-05	1.93E-05	2.45E-05	4.74E-05	8.38E-05	9.96E-05	1.07E-04	1.07E-04	1.06E-04	9.73E-05
TH232	0.		1.42E-11	4.21E-11	1.46E-10	3.14E-10	1.17E-09	3.51E-09	6.24E-09	1.98E-08	6.67E-08	5.91E-07	2.21E-06
TH234	0.		2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.83E-04
PA231	0.		3.18E-06	3.56E-06	4.56E-06	5.97E-06	1.43E-05	4.37E-05	7.27E-05	1.06E-04	1.07E-04	1.06E-04	9.73E-05
PA233	0.		3.87E-02	4.10E-02	4.15E-02	4.17E-02	4.19E-02	4.16E-02	4.10E-02	3.85E-02	3.07E-02	1.66E-03	3.66E-16
PA234M	0.		2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.83E-04
PA234	0.		2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.87E-07	2.83E-07
U233	0.		1.50E-04	4.07E-04	1.02E-03	1.70E-03	4.20E-03	9.42E-03	1.44E-02	2.89E-02	3.25E-02	1.66E-03	3.96E-16
U234	1.68E-01		1.99E-02	1.98E-02	1.96E-02	1.94E-02	1.86E-02	1.69E-02	1.51E-02	8.74E-03	1.47E-03	2.87E-04	2.83E-04
U235	4.57E-03		1.48E-05	1.58E-05	1.93E-05	2.45E-05	4.74E-05	8.38E-05	9.96E-05	1.07E-04	1.07E-04	1.06E-04	9.73E-05
U236	2.81E-03		2.99E-04	4.54E-04	7.36E-04	9.55E-04	1.29E-03	1.38E-03	1.38E-03	1.35E-03	1.04E-03	7.64E-05	
U237	0.		7.47E-06	6.59E-06	4.91E-06	3.51E-06	9.99E-07	5.31E-08	1.86E-09	9.68E-17	0.	0.	0.
U238	2.94E-02		2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.87E-04	2.83E-04

TABLE VIIIB (Continued)

LWR WASTE = A MIXTURE OF 60% BWR FUEL AND 40% PWR FUEL = 2ND PLUTONIUM RECYCLE

POWER= 2.01MW, BURNUP= 2738.MWD, FLUX= 1.20E+12N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN THE WASTE

	CHARGE	1.0E+00KYR	2.5E+00KYR	6.0E+00KYR	1.0E+01KYR	2.5E+01KYR	6.0E+01KYR	1.0E+02KYR	3.0E+02KYR	1.0E+03KYR	1.0E+04KYR	1.0E+05KYR
U240	0.	1.13E-11	2.81E-11	6.72E-11	1.12E-10	2.75E-10	6.37E-10	1.02E-09	2.55E-09	4.90E-09	5.29E-09	2.49E-09
NP237	0.	3.87E-02	4.10E-02	4.15E-02	4.17E-02	4.19E-02	4.16E-02	4.10E-02	3.85E-02	3.07E-02	1.66E-03	3.66E-16
NP239	0.	6.79E+00	5.93E+00	4.32E+00	3.00E+00	7.72E-01	3.24E-02	8.65E-04	3.39E-07	3.29E-07	2.25E-07	5.02E-09
NP240M	0.	1.13E-11	2.81E-11	6.72E-11	1.12E-10	2.75E-10	6.37E-10	1.02E-09	2.55E-09	4.90E-09	5.29E-09	2.49E-09
PU239	3.30E+01	5.61E-01	8.02E-01	1.21E+00	1.46E+00	1.50E+00	6.71E-01	2.20E-01	7.51E-04	3.29E-07	2.25E-07	5.02E-09
PU240	6.87E+01	3.65E+00	3.30E+00	2.30E+00	1.53E+00	3.29E-01	9.09E-03	1.51E-04	2.55E-09	4.90E-09	5.29E-09	2.49E-09
PU241	1.58E+04	2.99E-01	2.64E-01	1.97E-01	1.41E-01	4.00E-02	2.12E-03	7.42E-05	3.87E-12	0.	0.	0.
PU242	3.53E+01	6.27E-03	6.00E-03	6.57E-03	6.67E-03	6.65E-03	6.26E-03	5.87E-03	4.03E-03	1.12E-03	8.00E-11	0.
PU243	0.	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.43E-07	3.43E-07	3.42E-07	3.39E-07	3.29E-07	2.25E-07	5.02E-09
PU244	0.	1.13E-11	2.81E-11	6.71E-11	1.12E-10	2.75E-10	6.36E-10	1.02E-09	2.55E-09	4.90E-09	5.29E-09	2.49E-09
AM241	2.83E+01	1.23E+01	1.36E+00	2.10E-01	1.47E-01	4.00E-02	2.12E-03	7.42E-05	4.04E-12	0.	0.	0.
AM243	0.	6.79E+00	5.93E+00	4.32E+00	3.00E+00	7.72E-01	3.24E-02	8.65E-04	3.39E-07	3.29E-07	2.25E-07	5.02E-09
CM245	0.	2.98E-01	2.63E-01	1.96E-01	1.40E-01	3.99E-02	2.12E-03	7.41E-05	3.86E-12	0.	0.	0.
CM246	0.	5.50E-02	4.81E-02	2.64E-02	1.46E-02	1.61E-03	9.36E-06	2.61E-08	8.54E-19	6.63E-31	0.	0.
CM247	0.	3.44E-07	3.44E-07	3.44E-07	3.44E-07	3.43E-07	3.43E-07	3.42E-07	3.39E-07	3.29E-07	2.25E-07	5.02E-09
CM248	0.	1.47E-06	1.46E-06	1.45E-06	1.44E-06	1.40E-06	1.31E-06	1.21E-06	8.14E-07	2.05E-07	4.14E-15	0.
SUBTOT	1.60E+04	3.10E+01	1.80E+01	1.29E+01	9.58E+00	3.66E+00	1.01E+00	5.47E-01	4.62E-01	3.81E-01	2.45E-02	5.13E-03
TOTAL	1.64E+04	3.14E+01	1.80E+01	1.29E+01	9.58E+00	3.66E+00	1.01E+00	5.47E-01	4.62E-01	3.81E-01	2.45E-02	5.13E-03

TABLE IXA

PU WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL • 2ND PLUTONIUM RECYCLE

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	INITIAL	1,YR	2.5YR	6,YR	10,YR	25,YR	60,YR	100,YR	250,YR	600,YR	1000,YR
TL208	0.	1.15E-05	5.38E-05	1.64E-04	2.40E-04	2.67E-04	1.92E-04	1.31E-04	3.09E-05	1.06E-06	2.26E-08
PB210	0.	6.68E-15	2.59E-13	8.41E-12	6.29E-11	2.19E-09	5.65E-08	3.36E-07	6.09E-06	7.07E-05	2.18E-04
PB212	0.	3.20E-05	1.49E-04	4.56E-04	6.67E-04	7.41E-04	5.34E-04	3.63E-04	8.57E-05	2.95E-06	6.29E-08
PB214	0.	8.27E-13	1.29E-11	1.77E-10	8.12E-10	1.23E-08	1.59E-07	6.82E-07	8.24E-06	7.07E-05	2.18E-04
BI210	0.	6.68E-15	2.59E-13	8.41E-12	6.29E-11	2.19E-09	5.65E-08	3.36E-07	6.09E-06	7.07E-05	2.18E-04
BI212	0.	3.20E-05	1.49E-04	4.56E-04	6.67E-04	7.41E-04	5.34E-04	3.63E-04	8.57E-05	2.95E-06	6.29E-08
BI214	0.	8.27E-13	1.29E-11	1.77E-10	8.12E-10	1.23E-08	1.59E-07	6.82E-07	8.24E-06	7.07E-05	2.18E-04
PO210	0.	1.83E-15	1.29E-13	8.04E-12	6.29E-11	2.19E-09	5.65E-08	3.36E-07	6.09E-06	7.07E-05	2.18E-04
PO212	0.	2.05E-05	9.56E-05	2.92E-04	4.27E-04	4.75E-04	3.42E-04	2.32E-04	5.49E-05	1.89E-06	4.02E-08
PO214	0.	8.27E-13	1.29E-11	1.77E-10	8.12E-10	1.23E-08	1.59E-07	6.82E-07	8.24E-06	7.07E-05	2.18E-04
PO216	0.	3.20E-05	1.49E-04	4.56E-04	6.67E-04	7.41E-04	5.34E-04	3.63E-04	8.57E-05	2.95E-06	6.29E-08
PO218	0.	8.27E-13	1.29E-11	1.77E-10	8.12E-10	1.23E-08	1.59E-07	6.82E-07	8.24E-06	7.07E-05	2.18E-04
RN220	0.	3.20E-05	1.49E-04	4.56E-04	6.67E-04	7.41E-04	5.34E-04	3.63E-04	8.57E-05	2.95E-06	6.29E-08
RN222	0.	8.27E-13	1.29E-11	1.77E-10	8.12E-10	1.23E-08	1.59E-07	6.82E-07	8.24E-06	7.07E-05	2.18E-04
RA224	0.	3.20E-05	1.49E-04	4.56E-04	6.67E-04	7.41E-04	5.34E-04	3.63E-04	8.57E-05	2.95E-06	6.29E-08
RA226	0.	8.27E-13	1.29E-11	1.77E-10	8.12E-10	1.23E-08	1.59E-07	6.82E-07	8.24E-06	7.07E-05	2.18E-04
TH228	0.	3.20E-05	1.49E-04	4.56E-04	6.66E-04	7.41E-04	5.34E-04	3.63E-04	8.57E-05	2.95E-06	6.29E-08
TH230	0.	5.73E-09	3.57E-08	2.04E-07	5.80E-07	3.37E-06	1.70E-05	4.50E-05	2.00E-04	6.95E-04	1.28E-03
TH231	0.	2.61E-08	6.51E-05	1.56E-07	2.61E-07	6.51E-07	1.56E-06	2.60E-06	6.49E-06	1.55E-05	2.57E-05
PA233	0.	4.09E-06	2.45E-05	1.33E-04	3.47E-04	1.75E-03	6.64E-03	1.27E-02	3.32E-02	8.51E-02	8.53E-02
U232	0.	1.91E-04	4.30E-04	6.59E-04	7.59E-04	7.26E-04	5.20E-04	3.54E-04	8.35E-05	2.87E-06	6.12E-08
U233	0.	5.95E-12	9.08E-11	1.15E-09	5.04E-09	6.78E-08	6.40E-07	2.33E-06	1.73E-05	9.29E-05	2.23E-04
U234	0.	1.32E-03	3.28E-03	7.77E-03	1.28E-02	3.01E-02	6.36E-02	9.21E-02	1.44E-01	1.84E-01	1.70E-01
U235	0.	2.61E-08	6.51E-08	1.56E-07	2.61E-07	6.51E-07	1.56E-06	2.60E-06	6.49E-06	1.55E-05	2.57E-05
U236	0.	1.77E-06	4.42E-06	1.06E-05	1.77E-05	4.41E-05	1.06E-04	1.76E-04	4.36E-04	1.04E-03	1.04E-03
U237	0.	3.72E-01	3.47E-01	2.95E-01	2.44E-01	1.21E-01	2.35E-02	5.81E-03	3.22E-06	2.45E-13	1.80E-21
NP237	0.	4.09E-06	2.45E-05	1.33E-04	3.47E-04	1.75E-03	6.64E-03	1.27E-02	3.32E-02	8.51E-02	8.53E-02
PU236	2.25E-02	1.76E-02	1.22E-02	5.22E-03	1.97E-03	5.15E-05	1.04E-08	6.16E-13	8.94E-29	0.	0.
PU238	4.73E+02	4.69E+02	4.63E+02	4.51E+02	4.37E+02	3.89E+02	2.98E+02	2.17E+02	6.75E+01	4.42E+00	1.96E-01
PU239	2.67E+01	2.67E+01	2.67E+01	2.67E+01	2.67E+01	2.67E+01	2.67E+01	2.66E+01	2.65E+01	2.62E+01	2.59E+01
PU240	6.10E+01	6.10E+01	6.10E+01	6.09E+01	6.09E+01	6.08E+01	6.06E+01	6.04E+01	5.94E+01	5.73E+01	5.50E+01
PU241	1.56E+04	1.49E+04	1.39E+04	1.18E+04	9.76E+03	4.83E+03	9.39E+02	1.44E+02	1.24E-01	9.80E-09	7.24E-17
PU242	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01	4.08E-01
AM241	0.	2.45E+01	5.87E+01	1.30E+02	1.47E+02	3.59E+02	6.68E+02	4.65E+02	3.70E+02	2.11E+02	1.11E+02
SUBTOT	1.61E+04	1.55E+04	1.45E+04	1.24E+04	1.05E+04	5.67E+03	1.79E+03	9.14E+02	5.24E+02	3.00E+02	1.93E+02
TOTAL	1.61E+04	1.55E+04	1.45E+04	1.24E+04	1.05E+04	5.67E+03	1.79E+03	9.14E+02	5.24E+02	3.00E+02	1.93E+02

TABLE IXB

PU WASTE = A MIXTURE OF 40% BWR FUEL AND 60% PWR FUEL = 2ND PLUTONIUM RECYCLE

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	1.KYR	2.5KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
IL287	2.72E+07	1.00E+06	9.03E+06	2.35E+05	1.10E+04	5.95E+04	6.41E+04	9.09E+04	9.14E+04	9.06E+04	8.30E+04
TL209	1.66E+07	1.71E+06	1.18E+05	3.19E+05	1.44E+04	4.42E+04	7.57E+04	1.63E+03	1.82E+03	9.31E+05	2.22E+17
PB209	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
PB210	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
PB211	2.73E+07	1.67E+06	9.06E+06	2.36E+05	1.10E+04	3.96E+04	6.43E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
PB212	6.29E+08	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
PB214	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
BI210	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
BI211	2.73E+07	1.67E+06	9.06E+06	2.36E+05	1.10E+04	3.96E+04	6.43E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
BI212	6.29E+08	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
BI213	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
BI214	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
PO210	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
PO211	8.20E+10	5.00E+09	2.72E+08	7.08E+08	3.48E+07	1.19E+06	1.93E+06	2.74E+06	2.75E+06	2.73E+06	2.50E+06
PO213	7.37E+06	7.62E+05	5.22E+04	1.40E+03	6.42E+03	1.96E+02	3.27E+02	7.26E+02	8.11E+02	4.14E+03	9.89E+16
PO214	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
PO215	2.73E+07	1.67E+06	9.06E+06	2.36E+05	1.10E+04	3.96E+04	6.43E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
PO216	6.29E+08	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
PO218	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
AT217	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
RN219	2.73E+07	1.67E+06	9.06E+06	2.36E+05	1.10E+04	3.96E+04	6.43E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
RN220	6.29E+08	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
RN222	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
FR221	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
FR223	3.83E+09	2.35E+08	1.27E+07	3.30E+07	1.63E+06	5.55E+04	9.00E+04	1.28E+05	1.27E+05	1.17E+05	1.17E+05
RA223	2.73E+07	1.67E+06	9.04E+06	2.36E+05	1.10E+04	3.96E+04	6.43E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
RA224	6.29E+08	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
RA225	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
RA226	2.18E+04	1.30E+03	5.38E+03	1.07E+02	2.92E+02	8.35E+02	8.52E+02	9.01E+02	1.52E+02	3.43E+05	3.38E+05
RA228	8.20E+11	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
AC225	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
AC227	2.73E+07	1.67E+06	9.06E+06	2.36E+05	1.10E+04	3.96E+04	6.43E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
AC228	8.20E+11	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
TH227	2.69E+07	1.64E+06	8.93E+06	2.33E+05	1.08E+04	3.91E+04	6.34E+04	8.99E+04	9.04E+04	8.90E+04	8.21E+04
TH228	6.29E+08	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
TH229	7.53E+06	7.79E+05	5.34E+04	1.44E+03	6.57E+03	2.01E+02	3.35E+02	7.42E+02	8.29E+02	4.23E+03	1.01E+15
TH230	1.28E+05	3.45E+03	8.37E+03	1.38E+02	3.18E+02	6.30E+02	8.43E+02	8.98E+02	1.52E+02	3.43E+05	3.38E+05
TH231	2.57E+05	6.29E+05	1.44E+04	2.27E+04	4.66E+04	7.51E+04	8.64E+04	9.17E+04	9.17E+04	9.09E+04	8.32E+04
TH232	4.20E+11	2.50E+10	1.29E+09	3.17E+09	1.36E+08	4.26E+08	7.64E+08	2.45E+07	8.27E+07	7.35E+06	2.75E+05
TH234	6.27E+08	1.56E+07	3.74E+07	8.22E+07	1.53E+06	3.57E+05	5.73E+06	1.45E+05	2.44E+05	3.43E+05	3.38E+05
PA231	2.73E+07	1.67E+06	9.06E+06	2.36E+05	1.10E+04	3.96E+04	6.42E+04	9.12E+04	9.17E+04	9.09E+04	8.32E+04
PA233	8.53E+02	1.00E+01	1.08E+01	1.07E+01	1.07E+01	1.06E+01	1.04E+01	9.79E+02	7.80E+02	4.23E+03	9.31E+16
PA234M	6.27E+08	1.56E+07	3.74E+07	8.22E+07	1.53E+06	3.57E+05	5.73E+06	1.45E+05	2.44E+05	3.43E+05	3.38E+05
U233	2.23E+04	8.50E+04	2.44E+03	4.22E+03	1.00E+02	2.39E+02	3.47E+02	7.35E+02	8.24E+02	4.23E+03	1.01E+15
U234	1.70E+01	1.69E+01	1.68E+01	1.66E+01	1.59E+01	1.44E+01	1.29E+01	7.34E+02	1.03E+02	3.43E+05	3.38E+05
U235	2.57E+05	6.29E+05	1.44E+04	2.27E+04	4.66E+04	7.51E+04	8.64E+04	9.17E+04	9.17E+04	9.09E+04	8.32E+04
U236	1.68E+03	3.90E+03	7.92E+03	1.11E+02	1.59E+02	1.72E+02	1.72E+02	1.71E+02	1.68E+02	1.29E+02	9.50E+04
U238	8.27E+08	1.58E+07	3.74E+07	8.22E+07	1.53E+06	3.57E+05	5.73E+06	1.45E+05	2.44E+05	3.43E+05	3.38E+05
NP237	8.53E+02	1.06E+01	1.08E+01	1.07E+01	1.07E+01	1.06E+01	1.04E+01	9.79E+02	7.80E+02	4.23E+03	9.31E+16
PU239	2.59E+01	2.49E+01	2.25E+01	2.01E+01	1.31E+01	4.86E+00	1.56E+00	5.32E+03	1.24E+11	0.	0.
PU240	5.50E+01	4.72E+01	3.30E+01	2.19E+01	4.70E+00	1.30E+01	2.15E+03	2.69E+12	7.50E+15	0.95E+15	3.27E+15
PU242	4.08E+01	4.06E+01	4.04E+01	4.01E+01	3.90E+01	3.66E+01	3.40E+01	2.38E+01	6.56E+02	4.08E+09	0.
SUBTOT	8.17E+01	7.24E+01	5.63E+01	4.29E+01	1.90E+01	6.55E+00	3.42E+00	2.11E+00	1.16E+00	7.00E+02	1.08E+02
TOTAL	1.93E+02	8.50E+01	5.64E+01	4.29E+01	1.90E+01	6.55E+00	3.42E+00	2.11E+00	1.16E+00	7.00E+02	1.04E+02

TABLE XA

LMFBR SPENT FUEL = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER= 43.37MW, NEUTRON= 5867$,M=0, FLUX= 2.5ME+15N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LMFBR FUEL

	CHARGE	DISCHARGE	1,YR	2.5YR	6,YR	10,YR	25,YR	60,YR	100,YR	250,YR	600,YR	1000,YR
TL207	0.	1.79E-08	1.40E-08	5.95E-08	1.35E-07	2.48E-07	8.62E-07	3.02E-06	6.06E-06	1.91E-05	5.98E-05	1.14E-04
TL208	0.	2.93E-05	5.25E-05	4.14E-05	1.45E-02	2.09E-02	2.14E-02	1.54E-02	1.05E-02	2.47E-03	8.50E-05	1.81E-06
TL209	0.	5.80E-09	1.47E-09	1.75E-09	1.93E-09	2.16E-09	3.27E-09	7.77E-09	1.79E-08	1.43E-07	1.45E-06	5.58E-06
PB209	0.	2.55E-07	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
PB210	0.	5.04E-11	1.25E-10	3.27E-10	1.09E-09	5.97E-09	8.99E-08	1.57E-06	8.29E-06	1.35E-04	1.52E-03	4.68E-03
PB211	0.	1.83E-08	3.41E-08	5.97E-08	1.36E-07	2.48E-07	8.65E-07	3.03E-06	6.07E-06	1.92E-05	6.00E-05	1.14E-04
PB212	0.	8.13E-03	1.44E-02	2.54E-02	4.83E-02	5.80E-02	5.95E-02	4.27E-02	2.90E-02	6.84E-03	2.36E-04	5.03E-06
PB214	0.	1.54E-09	2.93E-09	6.19E-09	2.10E-08	5.96E-08	8.36E-07	4.18E-06	1.64E-05	1.82E-04	1.52E-03	4.68E-03
BI210	0.	5.04E-11	1.20E-10	3.27E-10	1.09E-09	5.97E-09	8.99E-08	1.57E-06	8.29E-06	1.35E-04	1.52E-03	4.68E-03
BI211	0.	1.80E-08	3.41E-08	5.97E-08	1.36E-07	2.48E-07	8.65E-07	3.03E-06	6.07E-06	1.92E-05	6.00E-05	1.14E-04
BI212	0.	8.13E-03	1.44E-02	2.54E-02	4.80E-02	5.80E-02	5.95E-02	4.27E-02	2.90E-02	6.84E-03	2.36E-04	5.03E-06
BI213	0.	2.55E-07	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
BI214	0.	1.54E-09	2.93E-09	6.19E-09	2.10E-08	5.96E-08	8.36E-07	4.18E-06	1.64E-05	1.82E-04	1.52E-03	4.68E-03
PO210	0.	5.13E-11	1.25E-11	2.41E-10	1.35E-09	5.97E-09	8.99E-08	1.57E-06	8.29E-06	1.35E-04	1.52E-03	4.68E-03
PO211	0.	5.59E-11	1.02E-10	1.79E-10	4.04E-10	7.45E-10	2.59E-09	9.09E-09	1.42E-08	5.76E-08	1.80E-07	3.42E-07
PO212	0.	5.27E-03	9.34E-03	1.62E-02	2.94E-02	3.71E-02	3.80E-02	2.73E-02	1.84E-02	4.39E-03	1.51E-04	3.22E-06
PO213	0.	2.44E-07	7.61E-08	7.77E-08	8.54E-08	9.62E-08	1.45E-07	3.45E-07	7.95E-07	6.37E-06	6.43E-05	2.48E-04
PO214	0.	1.54E-09	2.93E-09	6.18E-09	2.10E-08	5.96E-08	8.36E-07	4.18E-06	1.64E-05	1.82E-04	1.52E-03	4.68E-03
PO215	0.	1.80E-08	3.41E-08	5.97E-08	1.36E-07	2.48E-07	8.65E-07	3.03E-06	6.07E-06	1.92E-05	6.00E-05	1.14E-04
PO216	0.	8.13E-03	1.44E-02	2.54E-02	4.80E-02	5.80E-02	5.95E-02	4.27E-02	2.90E-02	6.84E-03	2.36E-04	5.03E-06
PO218	0.	1.54E-09	2.93E-09	6.18E-09	2.13E-08	5.96E-08	8.36E-07	4.18E-06	1.64E-05	1.82E-04	1.52E-03	4.68E-03
AT217	0.	2.55E-07	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
RN219	0.	1.80E-08	3.41E-08	5.97E-08	1.36E-07	2.48E-07	8.65E-07	3.03E-06	6.07E-06	1.92E-05	6.00E-05	1.14E-04
RN220	0.	8.13E-03	1.44E-02	2.54E-02	4.80E-02	5.80E-02	5.95E-02	4.27E-02	2.90E-02	6.84E-03	2.36E-04	5.03E-06
RN222	0.	1.54E-09	2.93E-09	6.18E-09	2.10E-08	5.96E-08	8.36E-07	4.18E-06	1.64E-05	1.82E-04	1.52E-03	4.68E-03
FR221	0.	2.55E-07	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
FR223	0.	2.73E-10	8.77E-10	8.35E-10	1.00E-09	3.98E-09	1.21E-08	8.24E-08	8.50E-08	2.69E-07	8.40E-07	1.59E-06
RA223	0.	1.80E-08	3.41E-08	5.97E-08	1.36E-07	2.48E-07	8.65E-07	3.03E-06	6.07E-06	1.92E-05	6.00E-05	1.14E-04
RA224	0.	8.13E-03	1.44E-02	2.54E-02	4.80E-02	5.80E-02	5.95E-02	4.27E-02	2.90E-02	6.84E-03	2.36E-04	5.03E-06
RA225	0.	1.38E-07	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
RA226	0.	1.54E-09	2.93E-09	6.18E-09	2.10E-08	5.96E-08	8.36E-07	4.18E-06	1.64E-05	1.82E-04	1.52E-03	4.68E-03
AC225	0.	2.55E-07	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
AC227	0.	1.98E-04	3.40E-08	5.96E-08	1.36E-07	2.48E-07	8.64E-07	3.03E-06	6.07E-06	1.92E-05	6.00E-05	1.14E-04
TH227	0.	1.83E-04	3.36E-08	5.49E-08	1.34E-07	2.45E-07	8.53E-07	2.99E-06	5.99E-06	1.89E-05	5.92E-05	1.12E-04
TH228	0.	8.10E-03	1.45E-02	2.53E-02	4.59E-02	5.78E-02	5.94E-02	4.27E-02	2.90E-02	6.84E-03	2.36E-04	5.03E-06
TH229	0.	7.39E-08	7.61E-08	7.94E-08	8.74E-08	9.84E-08	1.49E-07	3.53E-07	8.13E-07	6.51E-06	6.57E-05	2.54E-04
TH230	0.	2.58E-06	3.67E-06	6.25E-06	1.38E-05	2.56E-05	9.08E-05	4.32E-04	1.03E-03	4.48E-03	1.49E-02	2.75E-02
TH231	0.	3.44E-03	3.44E-03	3.65E-03	3.88E-03	3.88E-03	3.73E-03	3.85E-03	3.99E-03	4.51E-03	5.72E-03	7.08E-03
TH234	0.	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01
PA231	0.	6.42E-07	5.20E-07	6.37E-07	9.10E-07	1.22E-06	2.41E-06	5.23E-06	8.57E-06	2.21E-05	6.00E-05	1.14E-04
PA233	0.	1.57E-01	1.59E-01	1.61E-01	1.68E-01	1.74E-01	2.27E-01	3.65E-01	5.42E-01	1.13E+00	2.05E+00	2.68E+00
PA234M	0.	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01
PA234	0.	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04	2.91E-04
U232	0.	2.37E-02	3.59E-02	4.49E-02	5.82E-02	6.22E-02	5.81E-02	4.16E-02	2.83E-02	6.67E-03	2.30E-04	4.89E-06
U233	0.	2.22E-05	2.29E-05	2.40E-05	2.65E-05	2.94E-05	4.19E-05	8.53E-05	1.63E-04	7.05E-04	3.15E-03	7.20E-03
U234	8.62E-02	1.34E-01	1.38E-01	2.03E-01	2.93E-01	3.93E-01	7.42E-01	1.42E+00	2.00E+00	3.11E+00	3.61E+00	3.65E+00
U235	5.95E-03	3.04E-03	3.04E-03	3.05E-03	3.06E-03	3.08E-03	3.73E-03	3.85E-03	3.99E-03	4.51E-03	5.72E-03	7.08E-03
U236	0.	1.57E-02	1.58E-02	1.60E-02	1.64E-02	1.69E-02	1.67E-02	2.08E-02	2.56E-02	4.31E-02	8.30E-02	1.27E-01
U237	0.	1.85E-01	9.13E+00	8.54E+00	7.25E+00	6.01E+00	2.48E+00	5.78E-01	8.49E-02	8.25E-05	3.24E-06	3.14E-06
U238	3.11E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01	2.91E-01
U240	0.	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07
NP237	0.	1.58E-01	1.59E-01	1.61E-01	1.68E-01	1.74E-01	2.20E-01	3.65E-01	5.42E-01	1.13E+00	2.05E+00	2.66E+00

TABLE XA (Continued)

LMFBR SPENT FUEL = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER 45,37MW, BURNUP 38673,MWD, FLUX 2,38E+15N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LMFBR FUEL

	CHARGE	DISCHARGE	1.YR	2.5YR	5.YR	10.YR	25.YR	50.YR	100.YR	250.YR	500.YR	1000.YR
NP239	0.	4.53E+01	4.53E+01	4.32E+01	4.32E+01	4.32E+01	4.32E+01	4.30E+01	4.29E+01	4.23E+01	4.10E+01	3.95E+01
NP240M	0.	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07
PU236	1.56E-08	1.22E-08	9.57E-01	6.45E-01	2.64E-01	1.07E-01	2.80E-03	5.03E-07	3.36E-11	4.88E-27	0.	0.
PU238	1.52E+04	9.05E+03	9.31E+03	9.29E+03	9.05E+03	8.78E+03	7.83E+03	6.00E+03	4.42E+03	1.93E+03	1.12E+02	8.20E+00
PU239	2.24E+03	3.57E+03	3.57E+03	3.57E+03	3.57E+03	3.57E+03	3.57E+03	3.57E+03	3.56E+03	3.55E+03	3.51E+03	3.47E+03
PU240	5.54E+03	4.10E+03	4.10E+03	4.10E+03	4.10E+03	4.10E+03	4.09E+03	4.08E+03	4.06E+03	4.00E+03	3.86E+03	3.70E+03
PU241	7.27E+05	3.84E+05	3.48E+05	3.41E+05	2.90E+05	2.40E+05	1.19E+05	2.91E+04	3.55E+03	3.30E+00	1.30E-01	1.20E-01
PU242	7.80E+00	8.32E+00	8.32E+00	8.32E+00	8.32E+00	8.32E+00	8.32E+00	8.32E+00	8.33E+00	8.33E+00	8.33E+00	8.32E+00
PU243	0.	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08
PU244	0.	3.29E-07	3.29E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07
AM241	1.29E+03	2.35E+03	2.94E+03	3.79E+03	5.52E+03	7.17E+03	1.11E+04	1.38E+04	1.56E+04	1.07E+04	6.13E+03	3.21E+03
AM242M	0.	2.14E+02	2.13E+02	2.12E+02	2.09E+02	2.05E+02	1.91E+02	1.63E+02	1.36E+02	8.88E+01	1.39E+01	2.25E+00
AM242	0.	2.14E+02	2.13E+02	2.12E+02	2.09E+02	2.05E+02	1.91E+02	1.63E+02	1.36E+02	8.88E+01	1.39E+01	2.25E+00
AM243	0.	4.53E+01	4.53E+01	4.32E+01	4.32E+01	4.32E+01	4.32E+01	4.30E+01	4.29E+01	4.23E+01	4.10E+01	3.95E+01
AM244	0.	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10
CM242	0.	4.59E+00	1.83E+00	1.94E+00	1.79E+00	1.48E+00	1.57E+00	1.34E+00	1.11E+00	5.83E+01	1.14E+01	1.84E+00
CM243	0.	1.44E+02	1.41E+02	1.34E+02	1.26E+02	1.18E+02	8.37E+01	5.92E+01	1.85E+01	8.40E-01	3.27E-04	5.84E-08
CM244	0.	1.47E+03	1.41E+03	1.32E+03	1.13E+03	1.14E+03	8.45E+02	1.08E+02	3.83E+01	1.14E+01	1.74E-07	4.20E-10
CM245	0.	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.36E-01	1.35E-01	1.33E-01	1.32E-01	1.25E-01
CM246	0.	9.05E-03	9.05E-03	9.05E-03	9.04E-03	9.04E-03	9.02E-03	8.97E-03	8.92E-03	8.72E-03	8.24E-03	7.81E-03
CM247	0.	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08
CM248	0.	5.77E-08	5.77E-08	5.77E-08	5.77E-08	5.77E-08	5.77E-08	5.77E-08	5.77E-08	5.77E-08	5.70E-08	5.70E-08
BK249	0.	2.00E-04	1.19E-04	3.54E-05	2.11E-06	8.39E-08	4.71E-13	2.83E-25	2.01E-39	0.	0.	0.
CF249	0.	5.14E-07	4.72E-07	4.73E-07	4.48E-07	4.45E-07	4.14E-07	3.57E-07	2.92E-07	1.14E-12	1.99E-13	1.98E-13
CF250	0.	5.30E-07	5.03E-07	4.85E-07	3.88E-07	3.12E-07	1.41E-07	2.21E-08	2.85E-09	1.21E-10	1.08E-10	8.25E-11
CF251	0.	1.31E-10	1.31E-10	1.31E-10	1.30E-10	1.30E-10	1.28E-10	1.25E-10	1.21E-10	1.08E-10	8.25E-11	6.06E-11
CF252	0.	6.16E-13	4.74E-13	3.20E-13	1.28E-13	4.49E-11	8.84E-13	9.23E-17	2.83E-21	2.26E-38	0.	0.
SUBTOT	7.47E+05	4.91E+05	4.07E+05	3.84E+05	3.14E+05	2.88E+05	1.47E+05	5.12E+04	2.90E+04	1.49E+04	1.37E+04	1.05E+04
TOTAL	7.47E+05	4.91E+05	4.07E+05	3.84E+05	3.14E+05	2.88E+05	1.47E+05	5.12E+04	2.90E+04	1.49E+04	1.37E+04	1.05E+04

TABLE XB

LMFBR SPENT FUEL = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER= 63.37MW, BURNUP= 38671.MWD, FLUX= 2.39E+15N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC TON OF LMFBR FUEL

	CHARGE	1.YR	2.5YR	5.YR	10.YR	25.YR	50.YR	100.YR	300.YR	1000.YR	10000.YR	100000.YR
TL207	0.	1.1E+04	4.11E+04	1.05E+05	5.05E+05	1.70E+02	5.56E+02	8.92E+02	1.20E+01	1.20E+01	1.25E+01	1.15E+01
TL208	0.	1.81E+06	6.80E+04	1.20E+05	7.93E+05	3.35E+07	1.05E+06	1.88E+06	8.01E+06	2.03E+05	1.80E+04	6.75E+04
TL209	0.	5.04E+06	5.41E+05	3.03E+04	9.77E+04	4.41E+03	1.35E+02	2.25E+02	4.94E+02	5.56E+02	2.84E+03	6.74E+16
PB209	0.	2.56E+06	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
PB210	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
PB211	0.	1.14E+04	4.13E+04	1.05E+03	5.84E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
PB212	0.	5.03E+04	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
PB214	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
BI210	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
BI211	0.	1.14E+04	4.13E+04	1.05E+03	5.84E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
BI212	0.	5.03E+04	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
BI213	0.	2.56E+04	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
BI214	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
PO210	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
PO211	0.	5.42E+07	1.20E+06	9.05E+08	1.10E+05	5.12E+03	1.67E+02	2.56E+02	3.78E+02	3.80E+04	3.77E+04	3.45E+04
PO212	0.	5.22E+06	1.13E+06	5.47E+04	1.41E+07	5.95E+07	1.86E+06	3.33E+06	1.07E+05	3.20E+04	1.20E+04	4.80E+03
PO213	0.	2.56E+04	2.00E+05	1.05E+02	4.41E+02	1.84E+01	5.99E+01	9.49E+01	2.21E+00	2.47E+00	1.28E+01	3.01E+16
PO214	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
PO215	0.	1.14E+04	4.13E+04	1.05E+03	5.84E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
PO216	0.	5.03E+04	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
PO218	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
AT217	0.	2.56E+04	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
RN219	0.	1.14E+04	4.13E+04	1.05E+03	5.84E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
RN220	0.	5.03E+04	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
RN222	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
FR221	0.	2.56E+04	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
FR223	0.	1.59E+06	5.78E+06	2.31E+05	5.00E+05	2.39E+04	7.81E+02	1.25E+03	1.77E+03	1.77E+03	1.76E+03	1.61E+03
RA223	0.	1.14E+04	4.13E+04	1.05E+03	5.84E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
RA224	0.	5.03E+04	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
RA225	0.	2.56E+04	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
RA226	0.	6.84E+03	2.79E+02	1.18E+01	2.57E+01	6.30E+01	1.37E+00	1.88E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
RA228	0.	5.51E+04	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
AC225	0.	2.56E+04	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
AC227	0.	1.14E+04	4.13E+04	1.05E+03	5.84E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
AC228	0.	3.50E+10	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
TH227	0.	1.12E+04	4.07E+04	1.04E+03	5.81E+03	1.68E+02	5.50E+02	8.85E+02	1.19E+01	1.26E+01	1.19E+01	1.13E+01
TH228	0.	5.03E+06	1.05E+06	9.07E+08	2.22E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
TH229	0.	2.59E+08	2.00E+05	1.05E+02	4.41E+02	2.01E+01	6.13E+01	1.02E+00	2.28E+00	2.55E+00	1.29E+01	3.08E+16
TH230	0.	2.75E+02	7.42E+02	1.01E+01	2.44E+01	6.25E+01	1.36E+00	1.86E+00	2.05E+00	5.92E+01	2.91E+01	2.87E+01
TH231	0.	7.04E+03	1.21E+02	2.29E+02	3.40E+02	6.62E+02	1.04E+01	1.27E+01	1.27E+01	1.27E+01	1.26E+01	1.15E+01
TH232	0.	3.51E+09	1.05E+08	9.07E+08	2.20E+07	9.29E+07	2.91E+06	5.21E+06	1.87E+05	5.84E+05	5.01E+04	1.87E+03
TH234	0.	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+0	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.87E+01
PA231	0.	1.14E+04	4.12E+04	1.05E+03	5.80E+03	1.71E+02	5.56E+02	8.95E+02	1.20E+01	1.27E+01	1.20E+01	1.15E+01
PA233	0.	2.84E+00	5.23E+00	5.24E+00	5.24E+00	5.26E+00	5.22E+00	5.18E+00	2.98E+00	2.38E+00	1.29E+01	3.07E+16
PA234M	0.	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.87E+01
PA234	0.	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.91E+04	2.87E+04
U233	0.	7.20E+03	2.86E+02	7.44E+02	1.22E+01	5.24E+0	7.30E+01	1.12E+00	2.24E+00	2.52E+00	1.29E+01	3.07E+16
U234	8.82E+02	3.85E+00	3.84E+00	3.81E+00	3.57E+00	3.43E+00	3.14E+00	2.84E+00	1.74E+00	8.95E+01	2.91E+01	2.87E+01
U235	5.95E+06	1.04E+03	1.21E+02	2.29E+02	3.40E+02	6.62E+02	1.04E+01	1.20E+01	1.27E+01	1.27E+01	1.26E+01	1.15E+01
U236	0.	1.27E+01	2.74E+01	5.47E+01	7.55E+01	1.04E+02	1.17E+00	1.17E+00	1.16E+00	1.14E+00	8.79E+01	6.47E+02
U237	0.	3.14E+06	2.77E+06	2.08E+06	1.48E+06	6.19E+0	2.23E+08	7.79E+10	4.06E+17	0.	0.	0.
U238	3.11E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+0	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.91E+01	2.87E+01

TABLE XB (Continued)

LMFBR SPENT FUEL - A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

PO-ER= 43.37MW, BURNUP= 38673.MWD, FLUX= 2.38E+15N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE METRIC ON OF LMFBR FUEL

	CHANGE	1.KYR	2.5KYR	6.KYR	10.KYR	25 KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
U240	0.	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.22E-07	3.20E-07	2.97E-07	1.40E-07
NP237	0.	2.64E+00	3.23E+00	3.28E+00	3.28E+00	3.26E+00	3.22E+00	3.18E+00	2.98E+00	2.38E+00	1.29E-01	2.84E-14
NP239	0.	3.95E+01	3.45E+01	2.51E+01	1.75E+01	4.49E+00	1.89E-01	5.03E-03	5.24E-08	5.08E-08	3.47E-08	7.75E-10
NP240M	0.	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.22E-07	3.20E-07	2.97E-07	1.40E-07
PU239	2.24E+03	3.47E+03	3.33E+03	3.02E+03	2.70E+03	1.76E+03	6.53E+02	2.10E+02	7.16E-01	5.25E-08	3.47E-08	7.75E-10
PU240	3.54E+03	3.70E+03	3.18E+03	2.22E+03	1.47E+03	3.16E+02	8.75E+00	1.45E-01	3.23E-07	3.21E-07	2.98E-07	1.40E-07
PU241	7.27E+05	1.26E+01	1.11E-01	8.25E-02	5.90E-02	1.68E-02	8.92E-04	3.12E-05	1.62E-12	0.	0.	0.
PU242	7.80E+00	8.32E+00	8.30E+00	8.25E+00	8.19E+00	7.97E+00	7.47E+00	6.94E+00	4.82E+00	1.34E+00	9.55E-08	0.
PU243	0.	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.29E-08	5.28E-08	5.23E-08	5.08E-08	3.47E-08	7.75E-10
PU244	0.	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.23E-07	3.21E-07	2.98E-07	1.40E-07
AM241	1.29E+03	3.21E+03	2.91E+02	1.16E+00	6.37E-02	1.64E-02	8.92E-04	3.12E-05	1.71E-12	0.	0.	0.
AM243	0.	3.95E+01	3.45E+01	2.51E+01	1.75E+01	4.49E+00	1.89E-01	5.03E-03	[illegible]4E-08	5.08E-08	3.47E-08	7.75E-10
AM244	0.	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	[illegible]-10	4.17E-10	3.87E-10	1.82E-10
CM244	0.	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	4.20E-10	[illegible]-10	4.17E-10	3.87E-10	1.82E-10
CM245	0.	1.25E-01	1.10E-01	8.24E-02	5.89E-02	1.67E-02	8.90E-04	3.11E-05	[illegible]-12	0.	0.	0.
CM246	0.	7.81E-03	6.26E-03	3.74E-03	2.08E-03	2.29E-04	1.33E-06	3.70E-09	1.80E-18	1.40E-30	0.	0.
CM247	0.	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.30E-08	5.29E-08	5.28E-08	5.23E-08	5.08E-08	3.47E-08	7.75E-10
CM248	0.	5.76E-08	5.74E-08	5.70E-08	5.66E-08	5.49E-08	5.13E-08	4.74E-08	3.20E-08	8.06E-09	1.63E-16	0.
SUBTOT	7.34E+05	1.05E+04	6.89E+03	5.31E+03	4.23E+03	2.12E-03	7.02E+02	2.57E+02	5.75E+01	3.87E+01	7.76E+00	5.37E+00
TOTAL	7.47E+05	1.05E+04	6.89E+03	5.31E+03	4.23E+03	2.12E-03	7.02E+02	2.57E+02	5.75E+01	3.87E+01	7.76E+00	5.37E+00

TABLE XIA

LMFBR WASTE = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER= 0.02MW, BURNUP= 3587.MWD, FLUX= 2.20E+14N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	SEPARATI	1.0E+00YR	2.5E+00YR	6.0E+00YR	1.0E+01YR	2.5E+01YR	6.0E+01YR	1.0E+02YR	2.5E+02YR	6.0E+02YR	1.0E+03YR
TL207	0.		1.66E-09	3.04E-09	4.83E-09	8.69E-09	1.20E-08	2.39E-08	3.76E-08	4.45E-08	5.80E-08	9.46E-08	1.45E-07
TL208	0.		2.71E-04	1.92E-04	1.17E-04	4.59E-05	2.65E-05	1.99E-05	1.43E-05	9.70E-06	2.29E-06	7.88E-08	1.69E-09
TL209	0.		5.20E-10	1.51E-10	1.51E-10	1.54E-10	1.58E-10	1.95E-10	4.13E-10	9.14E-10	5.77E-09	4.21E-08	1.39E-07
PB209	0.		2.36E-08	6.86E-09	6.86E-09	6.98E-09	7.13E-09	8.66E-09	1.68E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
PB210	0.		4.67E-12	1.08E-11	2.80E-11	8.78E-11	2.03E-10	1.14E-09	9.72E-09	4.43E-08	7.34E-07	9.35E-06	3.07E-05
PB211	0.		1.67E-09	3.05E-09	4.84E-09	8.72E-09	1.27E-08	2.40E-08	3.77E-08	4.46E-08	5.82E-08	9.59E-08	1.46E-07
PB212	0.		7.54E-04	5.34E-04	3.25E-04	1.27E-04	7.36E-05	5.52E-05	3.96E-05	2.69E-05	6.36E-06	2.19E-07	4.66E-09
PB214	0.		1.43E-10	2.46E-10	4.03E-10	7.83E-10	1.27E-09	4.05E-09	2.35E-08	8.56E-08	9.97E-07	9.35E-06	3.07E-05
BI210	0.		4.67E-12	1.08E-11	2.80E-11	8.78E-11	2.04E-10	1.14E-09	9.72E-09	4.43E-08	7.34E-07	9.35E-06	3.07E-05
BI211	0.		1.67E-09	3.05E-09	4.84E-09	8.72E-09	1.27E-08	2.40E-08	3.77E-08	4.46E-08	5.82E-08	9.59E-08	1.46E-07
BI212	0.		7.54E-04	5.34E-04	3.25E-04	1.27E-04	7.36E-05	5.52E-05	3.96E-05	2.69E-05	6.36E-06	2.19E-07	4.66E-09
BI213	0.		2.36E-08	6.86E-09	6.86E-09	6.98E-09	7.19E-09	8.66E-09	1.68E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
BI214	0.		1.43E-10	2.46E-10	4.03E-10	7.83E-10	1.27E-09	4.05E-09	2.35E-08	8.56E-08	9.97E-07	9.35E-06	3.07E-05
PO210	0.		2.90E-12	7.43E-12	1.99E-11	7.59E-11	2.04E-10	1.14E-09	9.72E-09	4.43E-08	7.34E-07	9.35E-06	3.07E-05
PO211	0.		5.00E-12	9.15E-12	1.45E-11	2.62E-11	3.81E-11	7.20E-11	1.13E-10	1.34E-10	1.75E-10	2.08E-10	4.38E-10
PO212	0.		4.83E-04	3.42E-04	2.08E-04	8.15E-05	4.71E-05	3.53E-05	2.53E-05	1.72E-05	4.07E-06	1.40E-07	2.99E-09
PO213	0.		2.31E-08	6.71E-09	6.73E-09	6.83E-09	7.03E-09	8.67E-09	1.83E-08	4.06E-08	2.57E-07	1.87E-06	6.18E-06
PO214	0.		1.43E-10	2.46E-10	4.03E-10	7.83E-10	1.27E-09	4.05E-09	2.35E-08	8.56E-08	9.97E-07	9.35E-06	3.07E-05
PO215	0.		1.67E-09	3.05E-09	4.84E-09	8.72E-09	1.27E-08	2.40E-08	3.77E-08	4.46E-08	5.82E-08	9.59E-08	1.46E-07
PO216	0.		7.54E-04	5.34E-04	3.25E-04	1.27E-04	7.36E-05	5.52E-05	3.96E-05	2.69E-05	6.36E-06	2.19E-07	4.66E-09
PO218	0.		1.43E-10	2.46E-10	4.03E-10	7.83E-10	1.27E-09	4.05E-09	2.35E-08	8.56E-08	9.97E-07	9.35E-06	3.07E-05
AT217	0.		2.56E-08	6.88E-09	6.88E-09	6.98E-09	7.19E-09	8.86E-09	1.88E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
RN219	0.		1.67E-09	3.05E-09	4.84E-09	8.72E-09	1.27E-08	2.40E-08	3.77E-08	4.46E-08	5.82E-08	9.59E-08	1.46E-07
RN220	0.		7.54E-04	5.34E-04	3.25E-04	1.27E-04	7.36E-05	5.52E-05	3.96E-05	2.69E-05	6.36E-06	2.19E-07	4.66E-09
RN222	0.		1.43E-10	2.46E-10	4.03E-10	7.83E-10	1.27E-09	4.05E-09	2.35E-08	8.56E-08	9.97E-07	9.35E-06	3.07E-05
FR221	0.		2.36E-08	6.86E-09	6.86E-09	6.98E-09	7.19E-09	8.86E-09	1.88E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
FR223	0.		2.53E-11	4.20E-11	6.77E-11	1.22E-10	1.77E-10	3.36E-10	5.28E-10	6.24E-10	8.15E-10	1.34E-09	2.94E-09
RA223	0.		1.67E-09	3.05E-09	4.84E-09	8.72E-09	1.27E-08	2.40E-08	3.77E-08	4.46E-08	5.82E-08	9.59E-08	1.46E-07
RA224	0.		7.54E-04	5.34E-04	3.25E-04	1.27E-04	7.36E-05	5.52E-05	3.96E-05	2.69E-05	6.36E-06	2.19E-07	4.66E-09
RA225	0.		1.21E-04	6.86E-09	6.86E-09	6.98E-09	7.19E-09	8.86E-09	1.88E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
RA226	0.		1.43E-10	2.46E-10	4.03E-10	7.83E-10	1.27E-09	4.05E-09	2.35E-08	8.56E-08	9.97E-07	9.35E-06	3.07E-05
AC225	0.		2.36E-08	6.86E-09	6.86E-09	6.98E-09	7.19E-09	8.86E-09	1.88E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
AC227	0.		1.81E-09	3.05E-09	4.83E-09	8.71E-09	1.27E-08	2.40E-08	3.77E-08	4.46E-08	5.82E-08	9.59E-08	1.46E-07
TH227	0.		1.70E-09	3.01E-09	4.77E-09	8.60E-09	1.25E-08	2.37E-08	3.72E-08	4.40E-08	5.74E-08	9.46E-08	1.44E-07
TH228	0.		7.51E-04	5.31E-04	3.24E-04	1.27E-04	7.35E-05	5.52E-05	3.96E-05	2.69E-05	6.36E-06	2.19E-07	4.66E-09
TH229	0.		6.86E-09	6.86E-09	6.88E-09	6.98E-09	7.19E-09	8.86E-09	1.88E-08	4.15E-08	2.62E-07	1.91E-06	6.32E-06
TH230	0.		2.36E-07	2.39E-07	2.43E-07	2.62E-07	3.01E-07	6.03E-07	2.19E-06	5.29E-06	2.55E-05	9.66E-05	1.69E-04
TH231	0.		3.38E-04	3.38E-04	3.39E-04	3.40E-04	3.41E-04	3.46E-04	3.57E-04	3.70E-04	4.19E-04	5.33E-04	6.64E-04
TH234	0.		2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02
PA231	0.		4.10E-08	4.11E-08	4.12E-08	4.14E-08	4.17E-08	4.28E-08	4.54E-08	4.85E-08	6.09E-08	9.59E-08	1.46E-07
PA233	0.		1.48E-02	1.47E-02	1.48E-02	1.51E-02	1.54E-02	1.64E-02	1.88E-02	2.15E-02	3.00E-02	4.34E-02	5.18E-02
PA234M	0.		2.72E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02	2.70E-02
PA234	0.		2.70E-05	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07	2.70E-07
U232	0.		2.20E-05	3.14E-05	4.18E-05	5.40E-05	5.83E-05	5.39E-05	3.85E-05	2.62E-05	6.19E-06	2.13E-07	4.54E-09
U233	0.		2.06E-08	9.02E-08	1.92E-07	4.16E-07	6.76E-07	1.70E-06	4.34E-06	7.79E-06	2.44E-05	8.01E-05	1.62E-04
U234	[illegible]00E-03	1.28E-04	2.08E-04	3.94E-04	8.58E-04	1.38E-03	3.25E-03	7.08E-03	1.07E-02	1.93E-02	2.59E-02	2.73E-02	
U235	[illegible]02E-04	3.38E-06	3.38E-06	3.39E-06	3.40E-06	3.41E-06	3.46E-06	3.57E-06	3.70E-06	4.19E-06	5.33E-06	6.64E-06	
U236	0.		1.27E-05	1.28E-05	1.30E-05	1.34E-05	1.39E-05	1.56E-05	1.98E-05	2.46E-05	4.26E-05	8.36E-05	1.29E-04
U237	0.		1.72E-02	8.50E-03	7.92E-03	6.73E-03	5.58E-03	2.70E-03	5.37E-04	8.28E-05	3.84E-07	3.01E-07	2.91E-07
U238	2.89E-02	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	2.70E-04	
U240	0.		3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10
NP237	0.		1.47E-02	1.47E-02	1.48E-02	1.51E-02	1.54E-02	1.64E-02	1.88E-02	2.15E-02	3.00E-02	4.34E-02	5.18E-02

TABLE XIA (Continued)

LMFBR WASTE = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER= 4.02MW, BURNUP= 35AT.%HD, FLUX= 2.20E+14N/CM**2*SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	SEPARATION	1.0E+00YR	2.5E+00YR	6.0E+00YR	1.0E+01YR	2.5E+01YR	6.0E+01YR	1.0E+02YR	2.5E+02YR	6.0E+02YR	1.0E+03YR
NP239	0.	4.01E+00	4.01E+00	4.01E+00	4.01E+00	4.01E+00	4.00E+00	3.99E+00	3.98E+00	3.92E+00	3.80E+00	3.66E+00
NP240M	0.	3.00E-08	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10
PU236	1.44E-01	1.13E-03	8.88E-04	6.17E-04	2.63E-04	9.95E-05	2.59E-06	5.22E-10	3.12E-14	4.50E-30	0.	0.
PU238	1.22E+03	8.39E+00	3.97E+01	4.70E+01	4.70E+01	4.60E+01	4.26E+01	3.56E+01	2.91E+01	1.39E+01	2.64E+00	4.16E-01
PU239	2.08E+02	3.31E+00	3.31E+00	3.31E+00	3.32E+00	3.32E+00	3.32E+00	3.33E+00	3.33E+00	3.34E+00	3.34E+00	3.35E+00
PU240	3.28E+02	3.80E+00	3.82E+00	3.84E+00	3.89E+00	3.93E+00	4.05E+00	4.15E+00	4.17E+00	4.11E+00	3.97E+00	3.81E+00
PU241	6.74E+04	3.56E+02	3.40E+02	3.17E+02	2.69E+02	2.23E+02	1.10E+02	2.14E+01	3.31E+00	1.53E-02	1.20E-02	1.16E-02
PU242	7.24E-01	7.72E-03	7.73E-03	7.74E-03	7.76E-03	7.78E-03	7.87E-03	8.06E-03	8.24E-03	8.69E-03	9.05E-03	9.13E-03
PU243	0.	4.92E-11	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09
PU244	0.	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10	3.00E-10
AM241	1.19E+02	2.18E+02	2.18E+02	2.19E+02	2.19E+02	2.19E+02	2.18E+02	2.09E+02	1.96E+02	1.55E+02	8.83E+01	4.65E+01
AM242M	0.	1.99E+01	1.98E+01	1.97E+01	1.94E+01	1.90E+01	1.77E+01	1.51E+01	1.28E+01	6.36E+00	1.29E+00	2.08E-01
AM242	0.	1.99E+01	1.98E+01	1.97E+01	1.94E+01	1.90E+01	1.78E+01	1.51E+01	1.28E+01	6.36E+00	1.29E+00	2.08E-01
AM243	0.	4.01E+00	4.01E+00	4.01E+00	4.01E+00	4.01E+00	4.00E+00	3.99E+00	3.98E+00	3.92E+00	3.80E+00	3.66E+00
CM242	0.	7.97E+03	1.70E+03	1.80E+02	1.66E+01	1.50E+01	1.46E+01	1.24E+01	1.03E+01	5.22E+00	1.06E+00	1.71E+01
CM243	0.	1.33E+01	1.31E+01	1.26E+01	1.17E+01	1.07E+01	7.76E+00	3.64E+00	1.53E+00	5.94E-02	3.03E-05	5.25E-09
CM244	0.	1.55E+02	1.49E+02	1.41E+02	1.23E+02	1.05E+02	5.94E+01	1.56E+01	3.36E+00	1.08E-02	1.63E-08	3.94E-13
CM245	0.	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.25E-02	1.24E-02	1.20E-02	1.16E-02
CM246	0.	8.39E-04	8.39E-04	8.39E-04	8.39E-04	8.38E-04	8.36E-04	8.32E-04	8.27E-04	8.09E-04	7.68E-04	7.25E-04
CM247	0.	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09	4.92E-09
CM248	0.	5.35E-09	5.35E-09	5.35E-09	5.35E-09	5.35E-09	5.35E-09	5.35E-09	5.35E-09	5.35E-09	5.34E-09	5.34E-09
BK249	0.	2.47E-05	1.10E-05	3.29E-06	1.99E-07	7.78E-09	4.36E-14	2.44E-26	2.[illegible]E-40	0.	0.	0.
CF249	0.	2.91E-08	6.23E-08	8.10E-08	8.79E-08	8.77E-08	8.51E-08	7.95E-08	7.35E-08	5.47E-08	2.75E-08	1.25E-08
CF250	0.	4.92E-08	4.67E-08	4.31E-08	3.58E-08	2.90E-08	1.31E-08	2.05E-09	2.46E-10	1.06E-13	1.85E-14	1.82E-14
CF251	0.	1.21E-11	1.21E-11	1.21E-11	1.21E-11	1.20E-11	1.19E-11	1.18E-11	1.12E-11	1.00E-11	7.65E-12	5.62E-12
CF252	0.	5.72E-11	4.40E-11	2.97E-11	1.19E-11	4.17E-12	8.20E-14	8.56E-18	2.41E-22	2.10E-39	0.	0.
SUBTOT	6.93E+04	8.77E+03	2.51E+03	9.70E+02	7.40E+02	6.73E+02	5.03E+02	3.43E+02	2.85E+02	2.02E+02	1.10E+02	6.22E+01
TOTAL	6.93E+04	8.77E+03	2.51E+03	9.70E+02	7.40E+02	6.73E+02	5.03E+02	3.43E+02	2.85E+02	2.02E+02	1.10E+02	6.22E+01

TABLE XIB

LMFBR WASTE = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER= 4,02MW, BURNUP= 3587,MWD, FLUX= 2,20E+14N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	1.0E+00KYR	2,5E+00KYR	6,0E+00KYR	1,0E+01KYR	2,5E+01KYR	6,0E+01KYR	1,0E+02KYR	3,0E+02KYR	1,0E+03KYR	1,0E+04KYR	1,0E+05KYR
TL207	0,	1,45E-07	4,27E-07	1,64E-06	3,89E-06	1,86E-05	6,63E-05	1,10E-04	1,60E-04	1,60E-04	1,59E-04	1,46E-04
TL208	0,	1,68E-09	6,81E-12	3,34E-11	8,13E-11	3,43E-10	1,07E-09	1,92E-09	6,17E-09	2,08E-08	1,85E-07	6,93E-07
TL209	0,	1,39E-07	1,13E-06	7,06E-06	1,85E-05	8,29E-05	2,52E-04	4,19E-04	9,28E-04	1,04E-03	5,29E-05	1,28E-17
PB209	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
PB210	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
PB211	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
PB212	0,	4,66E-09	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
PB214	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
BI210	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
BI211	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
BI212	0,	4,66E-09	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
BI213	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
BI214	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
PO210	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
PO211	0,	4,38E-10	1,28E-09	4,93E-09	1,17E-08	5,59E-08	1,99E-07	3,32E-07	4,80E-07	4,83E-07	4,79E-07	4,38E-07
PO212	0,	2,99E-09	1,21E-11	5,94E-11	1,44E-10	6,10E-10	1,91E-09	3,42E-09	1,10E-08	3,70E-08	3,29E-07	1,23E-06
PO213	0,	6,18E-06	5,03E-05	3,14E-04	8,23E-04	3,68E-03	1,12E-02	1,86E-02	4,12E-02	4,61E-02	2,35E-03	5,62E-16
PO214	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
PO215	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
PO216	0,	4,66E-09	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
PO218	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
AT217	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
RN219	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
RN220	0,	4,66E-09	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
RN222	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
FR221	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
FR223	0,	2,04E-09	5,99E-09	2,30E-08	5,47E-08	2,61E-07	9,31E-07	1,55E-06	2,24E-06	2,25E-06	2,23E-06	2,05E-06
RA223	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
RA224	0,	4,66E-09	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
RA225	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
RA226	0,	3,07E-05	2,00E-04	8,55E-04	1,71E-03	4,72E-03	1,03E-02	1,38E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
RA228	0,	3,62E-12	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
AC225	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
AC227	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
AC228	0,	3,62E-12	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
TH227	0,	1,44E-07	4,22E-07	1,62E-06	3,85E-06	1,84E-05	6,58E-05	1,09E-04	1,58E-04	1,59E-04	1,57E-04	1,44E-04
TH228	0,	4,66E-09	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
TH229	0,	6,32E-06	5,14E-05	3,21E-04	8,41E-04	3,77E-03	1,14E-02	1,91E-02	4,22E-02	4,71E-02	2,40E-03	5,74E-16
TH230	0,	1,89E-04	5,41E-04	1,34E-03	2,21E-03	5,15E-03	1,02E-02	1,37E-02	1,47E-02	2,71E-03	2,70E-04	2,66E-04
TH231	0,	6,64E-06	1,15E-05	2,29E-05	3,55E-05	7,59E-05	1,29E-04	1,51E-04	1,61E-04	1,61E-04	1,60E-04	1,46E-04
TH232	0,	3,62E-12	1,89E-11	9,28E-11	2,26E-10	9,53E-10	2,98E-09	5,35E-09	1,71E-08	5,78E-08	5,14E-07	1,92E-06
TH234	0,	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,66E-04
PA231	0,	1,46E-07	4,28E-07	1,64E-06	3,91E-06	1,86E-05	6,65E-05	1,11E-04	1,60E-04	1,61E-04	1,60E-04	1,46E-04
PA233	0,	5,18E-02	6,03E-02	6,11E-02	6,11E-02	6,08E-02	6,01E-02	5,93E-02	5,56E-02	4,43E-02	2,40E-03	5,29E-16
PA234M	0,	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,66E-04
PA234	0,	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,70E-07	2,66E-07
U233	0,	1,62E-04	5,30E-04	1,43E-03	2,48E-03	6,08E-03	1,36E-02	2,09E-02	4,18E-02	4,70E-02	2,40E-03	5,72E-16
U234	8,00E-03	2,73E-02	2,74E-02	2,71E-02	2,68E-02	2,57E-02	2,34E-02	2,09E-02	1,20E-02	1,92E-03	2,70E-04	2,66E-04
U235	5,52E-04	6,64E-04	1,15E-03	2,29E-03	3,55E-03	7,59E-03	1,29E-02	1,51E-02	1,61E-02	1,61E-02	1,60E-04	1,46E-04
U236	0,	1,29E-04	2,82E-04	5,60E-04	7,77E-04	1,11E-03	1,20E-03	1,20E-03	1,20E-03	1,17E-03	9,02E-04	4,68E-05
U237	0,	2,91E-07	2,57E-07	1,91E-07	1,37E-07	3,89E-08	2,07E-09	7,23E-11	3,77E-18	0,	0,	0,
U238	2,89E-02	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,70E-04	2,66E-04

TABLE XIB (Continued)

LMFBR WASTE = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

POWER= 4.02MW, BURNUP= 3587.MWD, FLUX= 2.20E+15N/CM**2-SEC

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF ACTINIDES IN WASTE

	CHARGE	1.0E+00KYR	2.5E+00KYR	5.0E+00KYR	1.0E+01KYR	2.5E+01KYR	5.0E+01KYR	1.0E+02KYR	3.0E+02KYR	1.0E+03KYR	1.0E+04KYR	1.0E+05KYR
U240	0.	3.00E+10	3.00E+10	3.00E+10	3.00E+10	3.00E+10	3.02E+10	3.03E+10	3.08E+10	3.15E+10	2.95E+10	1.39E+10
NP237	0.	5.18E+02	6.03E+02	6.11E+02	6.11E+02	6.08E+02	6.01E+02	5.93E+02	5.56E+02	4.43E+02	2.40E+03	5.29E+10
NP239	0.	3.66E+00	3.20E+00	2.33E+00	1.02E+00	8.17E-01	1.75E-02	4.67E-04	4.86E-09	4.71E-09	3.22E-09	7.19E-11
NP240M	0.	3.00E+10	3.00E+10	3.00E+10	3.00E+10	3.00E+10	3.02E+10	3.03E+10	3.08E+10	3.15E+10	2.95E+10	1.39E+10
PU239	2.08E+02	1.35E+00	3.35E+00	3.29E+00	3.15E+00	2.35E+00	9.51E-01	3.01E-01	1.03E-03	4.72E-09	3.22E-09	7.19E-11
PU240	3.28E+02	3.81E+00	3.26E+00	2.29E+00	1.51E+00	3.25E-01	8.99E-03	1.49E-04	3.09E-10	3.15E+10	2.95E+10	1.39E+10
PU241	6.74E+04	1.18E+02	1.03E+02	7.80E+03	5.47E+03	1.50E+03	8.27E+05	2.89E+06	1.51E+13	0.	0.	0.
PU242	7.24E+01	9.13E+03	9.12E+03	9.06E+03	9.00E+03	8.76E+03	8.21E+03	7.64E+03	5.30E+03	1.07E+03	1.05E+10	0.
PU243	0.	4.92E+09	4.92E+09	4.92E+09	4.92E+09	4.91E+09	4.90E+09	4.90E+09	4.86E+09	4.71E+09	3.22E+09	7.19E+11
PU244	0.	3.00E+10	3.00E+10	3.00E+10	3.00E+10	3.01E+10	3.02E+10	3.03E+10	3.08E+10	3.15E+10	2.95E+10	1.39E+10
AM241	1.19E+02	4.65E+01	4.23E+00	2.36E-02	5.77E-03	1.56E+03	8.27E-05	2.89E-06	1.59E-13	0.	0.	0.
AM243	0.	3.66E+00	3.20E+00	2.33E+00	1.02E+00	8.17E-01	1.75E-02	4.67E-04	4.86E-09	4.71E-09	3.22E-09	7.19E-11
CM245	0.	1.18E+02	1.02E+02	7.84E+03	5.40E+03	1.55E+03	8.26E+05	2.89E+06	1.50E+13	0.	0.	0.
CM246	0.	7.25E+04	5.81E+04	3.47E+04	1.93E+04	2.12E+03	1.23E+07	3.43E+10	1.07E+19	1.30E+31	0.	0.
CM247	0.	4.92E+09	4.92E+09	4.92E+09	4.92E+09	4.91E+09	4.90E+09	4.90E+09	4.86E+09	4.71E+09	3.22E+09	7.19E+11
CM248	0.	5.34E+09	5.32E+09	5.29E+09	5.25E+09	5.09E+09	4.75E+09	4.39E+09	2.96E+09	7.47E+10	1.51E+17	0.
SUBTOT	6.81E+04	6.12E+01	1.74E+01	1.04E+01	8.11E+00	3.75E+10	1.34E+00	7.64E-01	6.60E-01	5.47E-01	3.29E-02	5.42E-03
TOTAL	6.93E+04	6.22E+01	1.74E+01	1.04E+01	8.11E+00	3.75E+10	1.34E+00	7.64E-01	6.60E-01	5.47E-01	3.29E-02	5.42E-03

TABLE XIIA

LMFBR PLUTONIUM = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	INITIAL	1.YR	2.5YR	6.YR	10.YR	25.YR	60.YR	100.YR	250.YR	600.YR	1000.YR
TL208	0.	7.54E-06	3.52E-05	1.07E-04	1.57E-04	1.74E-04	1.26E-04	8.55E-05	2.02E-05	6.95E-07	1.44E-08
PB210	0.	1.53E-15	5.96E-14	1.93E-12	1.44E-11	5.03E-10	1.30E-08	7.72E-08	1.40E-06	1.62E-05	5.00E-05
PB212	0.	2.09E-05	9.76E-05	2.98E-04	4.36E-04	4.85E-04	3.49E-04	2.37E-04	5.60E-05	1.93E-06	4.11E-08
PB214	0.	1.90E-13	2.96E-12	4.06E-11	1.87E-10	2.83E-09	3.65E-08	1.57E-07	1.89E-06	1.62E-05	5.00E-05
BI210	0.	1.53E-15	5.96E-14	1.93E-12	1.44E-11	5.03E-10	1.30E-08	7.72E-08	1.40E-06	1.62E-05	5.00E-05
BI212	0.	2.09E-05	9.76E-05	2.98E-04	4.36E-04	4.85E-04	3.49E-04	2.37E-04	5.60E-05	1.93E-06	4.11E-08
BI214	0.	1.90E-13	2.96E-12	4.06E-11	1.87E-10	2.83E-09	3.65E-08	1.57E-07	1.89E-06	1.62E-05	5.00E-05
PO210	0.	4.19E-16	2.97E-14	1.39E-12	1.44E-11	5.03E-10	1.30E-08	7.72E-08	1.40E-06	1.62E-05	5.00E-05
PO212	0.	1.34E-05	6.25E-05	1.91E-04	2.79E-04	3.10E-04	2.23E-04	1.52E-04	3.59E-05	1.24E-06	2.63E-08
PO214	0.	1.90E-13	2.96E-12	4.06E-11	1.87E-10	2.83E-09	3.65E-08	1.57E-07	1.89E-06	1.62E-05	5.00E-05
PO216	0.	2.09E-05	9.76E-05	2.98E-04	4.36E-04	4.85E-04	3.49E-04	2.37E-04	5.60E-05	1.93E-06	4.11E-08
PO218	0.	1.90E-13	2.96E-12	4.06E-11	1.87E-10	2.83E-09	3.65E-08	1.57E-07	1.89E-06	1.62E-05	5.00E-05
RN220	0.	2.09E-05	9.76E-05	2.98E-04	4.36E-04	4.85E-04	3.49E-04	2.37E-04	5.60E-05	1.93E-06	4.11E-08
RN222	0.	1.90E-13	2.96E-12	4.06E-11	1.87E-10	2.83E-09	3.65E-08	1.57E-07	1.89E-06	1.62E-05	5.00E-05
RA224	0.	2.09E-05	9.76E-05	2.98E-04	4.36E-04	4.85E-04	3.49E-04	2.37E-04	5.60E-05	1.93E-06	4.11E-08
RA226	0.	1.90E-13	2.96E-12	4.06E-11	1.87E-10	2.83E-09	3.65E-08	1.57E-07	1.89E-06	1.62E-05	5.00E-05
TH228	0.	2.09E-05	9.76E-05	2.98E-04	4.36E-04	4.85E-04	3.49E-04	2.37E-04	5.60E-05	1.93E-06	4.11E-08
TH230	0.	1.32E-09	8.19E-09	4.67E-08	1.28E-07	7.73E-07	4.09E-06	1.03E-05	8.73E-05	1.60E-04	2.94E-04
TH231	0.	4.14E-08	1.05E-07	2.51E-07	4.18E-07	1.05E-06	2.51E-06	4.18E-06	1.04E-05	2.49E-05	4.12E-05
PA233	0.	1.21E-06	7.27E-06	3.94E-05	1.03E-04	5.18E-04	1.97E-03	3.77E-03	9.78E-03	1.93E-02	2.53E-02
U232	0.	1.25E-04	2.61E-04	4.31E-04	4.96E-04	4.74E-04	3.40E-04	2.31E-04	5.46E-05	1.88E-06	4.00E-08
U233	0.	1.76E-12	2.69E-11	3.40E-10	1.50E-09	2.01E-08	2.01E-07	6.92E-07	5.11E-06	2.75E-05	6.61E-05
U234	0.	3.03E-04	7.54E-04	1.74E-03	2.93E-03	6.92E-03	1.46E-02	2.11E-02	3.35E-02	3.87E-02	3.90E-02
U235	0.	4.14E-08	1.05E-07	2.51E-07	4.18E-07	1.05E-06	2.51E-06	4.18E-06	1.04E-05	2.49E-05	4.12E-05
U236	0.	1.43E-06	3.57E-06	8.54E-06	1.43E-05	3.56E-05	8.53E-05	1.42E-04	3.52E-04	8.30E-04	1.36E-03
U237	0.	1.10E-01	1.03E-01	8.72E-02	7.23E-02	3.56E-02	6.96E-03	1.07E-03	9.52E-07	7.27E-14	5.34E-22
NP237	0.	1.21E-06	7.27E-06	3.94E-05	1.03E-04	5.18E-04	1.97E-03	3.77E-03	9.78E-03	1.93E-02	2.53E-02
PU238	1.09E+02	1.08E+02	1.06E+02	1.04E+02	1.00E+02	8.93E+01	6.80E+01	4.98E+01	1.55E+01	1.02E+00	4.51E-02
PU239	4.28E+01	4.28E+01	4.28E+01	4.28E+01	4.28E+01	4.28E+01	4.28E+01	4.27E+01	4.25E+01	4.21E+01	4.16E+01
PU240	4.92E+01	4.92E+01	4.92E+01	4.92E+01	4.92E+01	4.91E+01	4.89E+01	4.87E+01	4.80E+01	4.63E+01	4.44E+01
PU241	4.62E+03	4.40E+03	4.11E+03	3.49E+03	2.89E+03	1.43E+03	2.78E+02	4.27E+01	3.81E-02	2.90E-09	2.13E-17
PU242	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	9.99E-02	9.98E-02
AM241	0.	7.21E+00	1.74E+01	3.84E+01	5.65E+01	1.06E+02	1.39E+02	1.38E+02	1.09E+02	6.25E+01	3.30E+01
SUBTOT	4.82E+03	4.61E+03	4.32E+03	3.72E+03	3.14E+03	1.72E+03	5.76E+02	3.22E+02	2.16E+02	1.52E+02	1.19E+02
TOTAL	4.82E+03	4.61E+03	4.32E+03	3.72E+03	3.14E+03	1.72E+03	5.76E+02	3.22E+02	2.16E+02	1.52E+02	1.19E+02

TABLE XIIB

LMFBR PLUTONIUM = A MIXTURE OF CORE, AXIAL BLANKET, AND RADIAL BLANKET

NUCLIDE RADIOACTIVITY, CURIES
BASIS = ONE KILOGRAM OF PLUTONIUM

	1.KYR	2.5 KYR	6.KYR	10.KYR	25.KYR	60.KYR	100.KYR	300.KYR	1000.KYR	10000.KYR	100000.KYR
TL207	4.37E-07	2.67E-06	1.45E-05	3.77E-05	1.86E-04	6.34E-04	1.03E-03	1.46E-03	1.47E-03	1.45E-03	1.33E-03
TL209	4.91E-08	5.08E-07	3.44E-06	9.36E-06	4.2ME-05	1.31E-04	2.18E-04	8.83E-04	5.40E-04	2.76E-05	6.59E-18
PB209	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
PB210	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
PB211	4.39E-07	2.67E-06	1.45E-05	3.79E-05	1.8AE-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
PB214	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
BI210	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
BI211	4.39E-07	2.67E-06	1.45E-05	3.79E-05	1.86E-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
BI213	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
BI214	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
PO210	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
PO211	1.32E-09	8.02E-09	4.36E-08	1.14E-07	5.59E-07	1.91E-06	3.09E-06	4.39E-06	4.41E-06	4.37E-06	4.01E-06
PO213	2.18E-06	2.26E-05	1.55E-04	4.16E-04	1.90E-03	5.81E-03	9.70E-03	2.15E-02	2.40E-02	1.23E-03	2.93E-16
PO214	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
PO215	4.39E-07	2.67E-06	1.45E-05	3.79E-05	1.85E-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
PO218	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
AT217	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
RN219	4.39E-07	2.67E-06	1.45E-05	3.79E-05	1.86E-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
RN222	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
FR221	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
FR223	6.14E-09	3.74E-08	2.04E-07	5.30E-07	2.61E-06	8.90E-06	1.44E-05	2.05E-05	2.06E-05	2.04E-05	1.87E-05
RA223	4.39E-07	2.67E-06	1.45E-05	3.79E-05	1.86E-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
RA225	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
RA226	5.00E-05	2.99E-04	1.24E-03	2.45E-03	6.71E-03	1.46E-02	1.96E-02	2.07E-02	3.49E-03	8.39E-06	8.28E-06
AC225	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
AC227	4.39E-07	2.67E-06	1.45E-05	3.79E-05	1.86E-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
TH227	4.33E-07	2.64E-06	1.43E-05	3.73E-05	1.84E-04	6.27E-04	1.02E-03	1.44E-03	1.45E-03	1.44E-03	1.32E-03
TH229	2.23E-06	2.31E-05	1.58E-04	4.25E-04	1.94E-03	5.95E-03	9.92E-03	2.20E-02	2.46E-02	1.25E-03	2.99E-16
TH230	2.94E-04	7.92E-04	1.92E-03	3.16E-03	7.31E-03	1.45E-02	1.94E-02	2.06E-02	3.49E-03	8.39E-06	8.28E-06
TH231	4.12E-05	1.01E-04	2.31E-04	3.64E-04	7.49E-04	1.20E-03	1.39E-03	1.47E-03	1.47E-03	1.46E-03	1.34E-03
TH234	1.54E-08	3.83E-08	9.17E-08	1.52E-07	3.76E-07	8.73E-07	1.40E-06	3.55E-06	7.05E-06	8.39E-06	8.28E-06
PA231	4.39E-07	2.67E-06	1.45E-05	3.7AE-05	1.86E-04	6.36E-04	1.03E-03	1.46E-03	1.47E-03	1.46E-03	1.34E-03
PA233	2.53E-02	3.13E-02	3.19E-02	3.18E-02	3.17E-02	3.13E-02	3.09E-02	2.90E-02	2.31E-02	1.25E-03	2.76E-16
PA234M	1.54E-08	3.83E-08	9.17E-08	1.52E-07	3.76E-07	8.73E-07	1.40E-06	3.55E-06	7.05E-06	8.39E-06	8.28E-06
U233	6.61E-05	2.54E-04	7.22E-04	1.25E-03	3.15E-03	7.09E-03	1.09E-02	2.18E-02	2.45E-02	1.25E-03	2.98E-16
U234	3.90E-02	3.88E-02	3.85E-02	3.80E-02	3.65E-02	3.31E-02	2.95E-02	1.69E-02	2.37E-03	8.39E-06	8.28E-06
U235	4.12E-05	1.01E-04	2.31E-04	3.64E-04	7.49E-04	1.20E-03	1.39E-03	1.47E-03	1.47E-03	1.46E-03	1.34E-03
U236	1.36E-03	3.15E-03	6.39E-03	8.92E-03	1.2AE-02	1.39E-02	1.39E-02	1.38E-02	1.35E-02	1.04E-02	7.66E-04
U238	1.54E-08	3.83E-08	9.17E-08	1.52E-07	3.76E-07	8.73E-07	1.40E-06	3.55E-06	7.05E-06	8.39E-06	8.28E-06
NP237	2.53E-02	3.13E-02	3.19E-02	3.18E-02	3.17E-02	3.13E-02	3.09E-02	2.90E-02	2.31E-02	1.25E-03	2.76E-16
PU239	4.16E+01	3.99E+01	3.81E+01	3.23E+01	2.11E+01	7.80E+00	2.50E+00	8.54E-03	1.98E-11	0.	0.
PU240	4.44E+01	3.81E+01	2.66E+01	1.77E+01	3.79E+00	1.05E-01	1.74E-03	3.88E-09	3.86E-09	3.58E-09	1.68E-09
PU242	9.98E-02	9.96E-02	9.89E-02	9.82E-02	9.56E-02	8.98E-02	8.33E-02	5.78E-02	1.61E-02	1.15E-09	0.
AM241	3.30E+01	2.99E+00	1.10E-02	1.83E-05	6.86E-10	0.	0.	0.	0.	0.	0.
SUBTOT	1.19E+02	8.12E+01	6.30E+01	5.01E+01	2.52E+01	8.31E+01	2.99E+00	5.76E-01	3.50E-01	4.04E-02	1.58E-02
TOTAL	1.19E+02	8.12E+01	6.30E+01	5.01E+01	2.52E+01	8.31E+10	2.99E+00	5.76E-01	3.50E-01	4.04E-02	1.58E-02

APPENDIX C

METHODOLOGICAL NOTE

The use of ALTHAEA to normalize the ORIGIN code was necessary in order to provide an accurate transition from the Yankee and Saxton lattices where measured isotopic data exists to the current 1100 MWe class PWR and BWR lattice for which there is no current actinide isotopic information.

ORIGEN is a two energy group transmutation code. Different lattices are distinguished from each other only by different input values of the fast to thermal flux ratio. This neglects two important effects when major differences in the fuel rod lattice type occur. First the effective resonance integral is a strong function of rod size, lattice pitch, and nuclide concentration. Secondly the thermal flux depression factor also depends upon both the lattice and the exposure.

The ALTHAEA code computes both of these major effects in addition to providing lattice-characteristic flux ratios. There are also several more minor effects contained in ALTHAEA that relate to designed operating conditions such as the effect of moderator and fuel average operating temperatures.

The combination of a lattice transmutation (ALTHAEA) code along with the much more comprehensive ORIGEN isotopic data base has permitted a much more reliable extrapolation from the lattices of known discharge isotopic concentration to the current design types than would have been possible with ORIGEN alone.